ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

SEPTEMBER 28, 1939

Ralph Budd—Retired railroad man heads Chicago rapid transit [illegible] p. 311

CENTRAL REPAIR SHOP CUTS COSTS

DAM PIERCED BELOW WATER

BYERS IRON
U. S. NAVAL HOSPITAL
Beaufort, South Carolina
Navy Department, Bureau of Yards & Docks
Architects
M. O. Seckinger Plumbing & Heating Company
Plumbing and Heating Contractor

BYERS WROUGHT IRON PIPE

helps to Ban Maintenance in 5 vital services

Recently expanded by the addition of auxiliary buildings, including nurses, corpsmen, and office quarters and utility structures, the fine new Naval Hospital at Beaufort, S. C., follows old tradition in the designers' insistence on durability and dependability. The piping provides one specific example. Downspouts, sanitary piping $1\frac{1}{2}$-inches and smaller, water piping, fire lines 6-inches and larger, and all steam return lines were specified "wrought iron". Byers Wrought Iron pipe was installed.

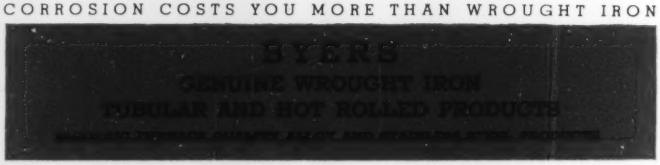
Everyone concerned with hospital operation knows how important it is to build for maximum service life, for every dollar spent for *avoidable* repairs drains away funds needed for other things. The question of selection takes on added importance now, when so many communities are building facilities under the Public Health Service program. Cutting corners in the piping specifications may saddle the community with a burdensome load of maintenance expense for years to come.

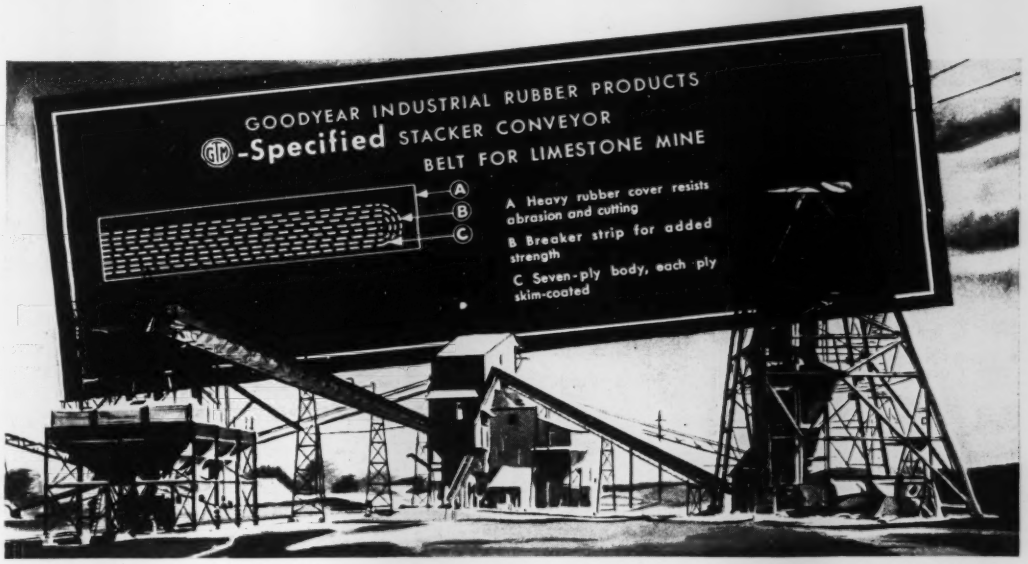
Wrought iron has served in almost every piping service, in hospitals all over the country, and its performance is a matter of engineering record. The reason for its superior corrosion resistance is found in its unusual character. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and disperse corrosive attack, and so discourage pitting and penetration. The fibers also help anchor the initial protective film, which shields the underlying metal.

Our bulletin, WROUGHT IRON FOR PIPING SYSTEMS, discusses the corrosive conditions encountered in many building services, and the success of wrought iron in withstanding them. We will be glad to send you a copy, on request.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, Seattle, San Francisco. Export Division: New York, N. Y.

CORROSION COSTS YOU MORE THAN WROUGHT IRON





They tote thousands of tons per day

in the world's deepest limestone "mine"

BURIED half a mile under Ohio is the world's deepest "quarry"—a mine that produces limestone at the rate of thousands of tons per working day. And every ounce of that river of rock rides on Goodyear Conveyor Belts for much of the way between the working faces of the mine and storage bins located on the surface.

When the mine owner called in the G.T.M.—Goodyear Technical Man—to recommend the belts best suited to conveyorize the operation, he specified Goodyear Stacker Conveyor to carry the limestone from crusher to storage bins—both located deep in the mine. Three belts—each 42" wide, 7-ply construction—were installed to handle this part of the operation. The G.T.M. recommended Stacker Conveyor because Stacker's extremely tough covers and bonding breaker are more than strong enough to handle the severe abrasion of the rock.

At the shaft head, the crushed rock travels from head frame to storage bins via nearly a half mile of Goodyear 6-ply, 32-oz. duck belting, installed on seven different conveyors handling various sizes of rock.

Altogether, this mine uses a total of ten Goodyear conveyor belts—all installed in accordance with the recommendations of the G.T.M. His recommendations can be your own best insurance of economical, long-life conveyor belt haulage, either above ground or below surface. It will pay you to consult the G.T.M. first. Write him c/o Goodyear, Akron 16, Ohio.

For Hose, Flat Belts, V-Belts, Molded Goods, Packing, Tank Lining *built to the world's highest standard of quality, phone your nearest Goodyear Industrial Rubber Products Distributor.*

We think you'll like "THE GREATEST STORY EVER TOLD" Every Sunday—ABC Network

GOODYEAR

THE GREATEST NAME IN RUBBER

CONCRETE
Engineers
Contractors!

OBTAIN GREATER

- WORKABILITY
- DURABILITY
- CONTROLLED AIR

with

DAREX AEA

SAVES MONEY

Improved workability with DAREX AEA makes concrete easier to place, eliminates segregation, permits quicker finishing.

LASTS LONGER

DAREX AEA improves the durability of hardened concrete as much as 500%.

CONTROLS AIR CONTENT

DAREX AEA gives you complete control of the air content regardless of the type of aggregates used or changes in field conditions.

★

Simple but reliable dispensers for proportioning DAREX AEA are available

★

Engineering service and stocks of DAREX AEA at twelve convenient points throughout the United States and Canada.

Cement Division
DEWEY AND ALMY CHEMICAL COMPANY
CAMBRIDGE 40, MASSACHUSETTS

ENGINEERING NEWS-RECORD

VOLUME 143 SEPTEMBER 29, 1949 NO. 13

WALDO G. BOWMAN
Editor

FEATURES IN THIS ISSUE

Central Repair Shop Cuts Maintenance Costs.....R. G. Chapman 32
Honolulu Builds Sewer Inside Out.....G. C. Wallace 35
A Hill Is Leveled in Los Angeles..... 36
Discharge Intakes Pierce Dam..... 38
Worth a Million Dollars to Shorten Rail Line 30 ft..... 41
How to Avoid Oil-Waste Pollution.....W. B. McMorris 42
Test Fits Worker to Right Job..... 44

DEPARTMENTS

Construction Week 17
Construction Trends 19
Editorials 21
News of the Week..... 23
Notes on Legal Decisions..... 46
Developments Abroad 51
Men and Jobs..... 54
Elections and Activities..... 59
Education and Research..... 60
Obituaries 62
Unit Prices 64
Construction Reports 67
New Products 102
Reader Comment 112

Number of copies this issue..45,438

Managing Editor—Eugene E. Halmos, Jr.

Associate Editors—*New York*, V. T. Boughton, (senior associate), F. S. Merritt, R. H. Dodds, J. C. Bumstead, R. N. Larkin; *Cleveland*, J. R. Carr; *Chicago*, H. T. Perez; *San Francisco*, N. A. Bowers; *Washington*, V. B. Smith.

Assistant Editors—*New York*, T. D. MacGregor, Arthur J. Fox, Jr., Melvin Dean; *San Francisco*, L. L. Wise.

Contributing Editor—Edward J. Cleary.

Business News—Elsie Eaves, *Manager*; J. A. Mahoney, Robert F. Westervelt, M. W. Roessler, M. Wetzel, E. M. Huber, Jane Lucia.

Staff Assistants—Ethel Lyon, Louise Barker, Helen Chase, Henry Lefer, Behri Pratt, Ruth Imler.

Domestic News Bureaus—Atlanta, Chicago, Cleveland, Detroit, Houston, Los Angeles, San Francisco, Washington. Correspondents in 71 cities in the United States, Canada and Mexico.

Foreign News Bureaus—London, Frankfort, Paris, Moscow, Tokyo, Bombay, Melbourne, Rio de Janeiro, Mexico City. *Correspondents*—Athens, Rome, Caracas, Buenos Aires, Santiago, Shanghai, Zurich, Johannesburg and 40 other cities.

ROBERT F. BOGER
Publisher

Member ABC Member ABP

September 29, 1949 **ENGINEERING NEWS-RECORD** Vol. 143—No. 13

Publication Office—99-129 N. Broadway, Albany 1, N. Y.

Executive and Editorial Offices—330 West 42nd St., New York 18, N. Y.

Copyright 1949 by McGraw-Hill Publishing Co., Inc. All rights reserved. Published every Thursday by the McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) founder; JAMES H. McGRAW, JR., President; CURTIS W. McGRAW, Senior Vice-President and Treasurer; JOSEPH A. GERARDI, Secretary; NELSON BOND, Vice-President and Director of Advertising; EUGENE DUFFIELD, Senior Vice-President, Publications Division; J. E. BLACKBURN, JR., Vice-President and Director of Circulation. Cable Address, "McGraw-Hill New York."

Subscriptions: (1 yr., 2 yr., 3 yr.) U. S. and possessions $6, $9, $12; Pan America, $10, $16, $20; Canada, $7, $11, $14; All others, $20, $30, $40.

Address all communications about subscriptions to Director of Circulation. Price 35¢ per copy.

Please indicate position and company connection on all subscription orders.

Entered as Second Class matter October 29, 1936, at the Post Office at Albany, N. Y., under Act of March 3, 1879. Printed in U. S. A.

YOU BUY A DRAGLINE

...to make money!

Perhaps in no other business does the difference between profit and loss depend so heavily on the performance of one machine. Your dragline is the heart of your job and you can't afford anything but the best for the heart of the job.

Northwest design brings you the stamina for dragline service, long travel and steady output.

Cast Steel Bases and Cast Steel Machinery Side Frames maintain shaft and bearing alignment in rough going. Simplicity assures easy upkeep and minimum down time. The "Feather-Touch" Clutch Control gives ease of operation without tubing, delicate valves or pumps (your Northwest can't be shut down because of control failure). Uniform Pressure Swing Clutches take the jerks and grabs out of swinging and cut down on time lost to poor control in spotting loads. The Cushion Clutch increases machine and cable life by relieving all parts under power from shock loads. The Northwest Crawler and positive traction on both crawler belts while turning as well as when going straight ahead will take the Northwest where other crawlers have difficulty.

Here is a dragline that *will* make money. Make it the Key Machine on your job.

NORTHWEST ENGINEERING COMPANY
1502 Field Bldg., 135 South LaSalle St., Chicago 3, Illinois

NORTHWEST ADVANTAGES MEAN MORE YARDAGE

only the best for the heart of the job

MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL

PROFIT

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS - CRANES - DRAGLINES - PULLSHOVELS

FOR 50 YEARS

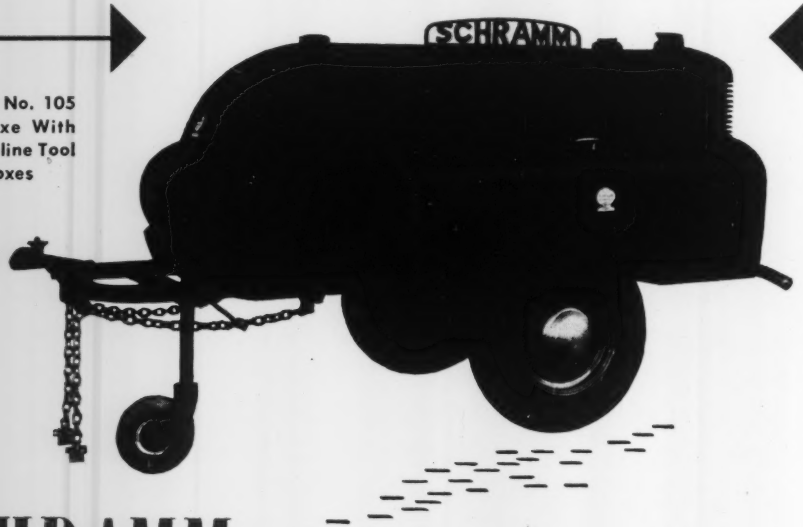
SCHRAMM

HAS LED THE WAY WITH

"FIRSTS"

IN AIR COMPRESSOR IMPROVEMENTS

1900	Independent service and repair shop for Industrial Compressors and Power Plants in Philadelphia.
1908	First really portable Engine Driven Compressor built.
1917	Multi-Cylinder Engine Driven Multi-Cylinder Compressors.
1918	Designed and built SCHRAMM engines for operating SCHRAMM Compressors.
1918	Portable Compressor with clutch between Engine and Compressor.
1919	Portable Diesel Engine Driven Compressor.
1923	Electric starting standard on all engine driven models.
1935	Built two-staging portable Engine Driven Compressors, also air-cooled single and two stage models.
1936	Perfected mechanical intake valve, the most progressive improvement in Portable Compressor design. Also eliminated out-moded two stage and air cooled compressors.
1938	Built live, self-sealing, easy turning Hose Reels.
1940	Designed large substantial tool boxes for carrying large assortment of air tools.
1949	The *PNEUMASTAT* another SCHRAMM innovation, that cuts fuel costs up to 50%. Also the SCHRAMM engine and compressor block with interchangeability of parts, became standard equipment on the model #105.



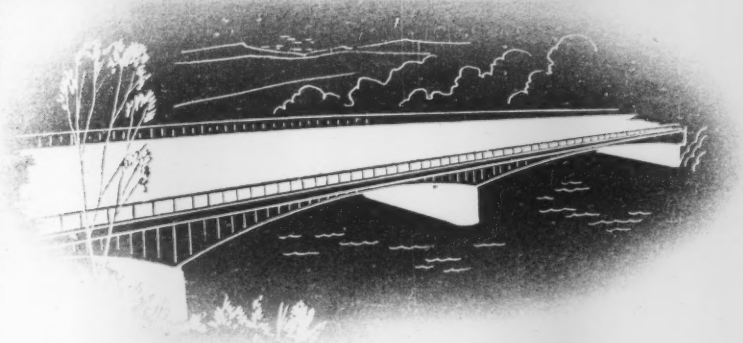
Model No. 105 De Luxe With Streamline Tool Boxes

SCHRAMM INC. THE COMPRESSOR PEOPLE • WEST CHESTER • PA.

53 years EXPERIENCE

in every phase of

BRIDGE BUILDING



THE modern, streamlined bridge of today is a far cry from the covered bridge of yesterday. The 53 years of Fort Pitt Bridge experience is available for Modern Bridge Planning—NOW!

FORT PITT BRIDGE WORKS

Member American Institute of Steel Construction

AMERICAN INSTITUTE OF STEEL CONSTRUCTION INC. AISC FOUNDED 1921

General Offices, Pittsburgh, Pa. **Plant at Canonsburg, Pa.**

BRANCH OFFICES

New York, N.Y.....441 Lexington Ave.
Cleveland, Ohio.....Bulkley Building
Columbus, Ohio..Huntington Bank Bldg.
Detroit, Michigan....New Center Bldg.

"STEEL PERMITS STREAMLINING CONSTRUCTION WITH SAFETY, ENDURANCE AND ECONOMY."

ZONED

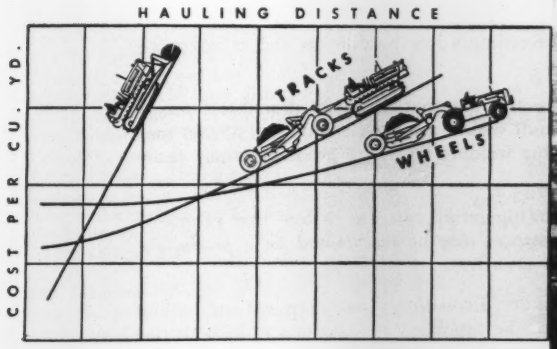
PAYS OFF IN THE [redacted] COLUMBIA GORGE

The "Caterpillar" Diesel D8 Tractor, with a "Caterpillar" No. 8A Bulldozer, can handle big blade loads in the toughest going. Special high-tensile steel in the blade and box beam construction give this 'dozer the ruggedness needed to hold up in rock work.

"Caterpillar" Diesel D8 Tractors and No. 80 Scrapers scalping topsoil off the right of way. Features of the No. 80 Scraper are its 18-heaped-yard load capacity—easy loading due to good blade angle and bowl proportions—'dozer-type ejection—high apron lift—open-top bowl—big-tire handling ease and low over-all maintenance.

EQUIPMENT

Building a section of highway through the Columbia River Gorge near Arlington, Oregon, Rogers Construction Co., of Portland, has standardized on "Caterpillar" equipment. . . . The line-up includes a "Caterpillar" No. 28 Ripper to loosen the lava rock, D8 Tractors with No. 8A Bulldozers and No. 80 Scrapers, DW10 Tractors pulling W10 Wagons on the longer hauls, and a No. 12 Motor Grader for maintaining haul roads. In all, 30 of the big yellow machines are on this job, zoned to pay off in big production at low cost.



WATCH YOUR ZONING POINTS! Zoning points depend on grades, size of scrapers, loading methods and character of job. Too long a stretch for tracks is costly. So is too short a haul for wheels. In sound zoning it pays to standardize on "Caterpillar." Only "Caterpillar" offers a complete line of Earthmoving Equipment.

1. Track-type Tractors and 'Dozers for "push" distances.
2. Track-type Tractors for loading and pulling scrapers on medium hauls.
3. Wheel-type Tractors for high-speed hauls—plus Motor Graders for finishing and haul-road maintenance.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

Rolling on rubber, the "Caterpillar" Diesel DW10 Tractor makes time on long hauls, traveling at speeds up to 24.5 mph. with 14 cubic yards on the W10 Wagon. Features of this productive team are the conservatively rated 115-horsepower engine, big tires, air brakes, booster steering, and hydraulically controlled windrowing of the dump.

CATERPILLAR
REG. U.S. PAT. OFF.
DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

Announcing...

A New Low-Cost Process for Production of WELDED PIPE... in sizes from 8⅝" to 30" O.D.

Initial Investment Reduced by 60%

This completely new process embodies equipment for cold forming of skelp in specially designed hydraulic presses, and welding by the submerged arc method; also auxiliaries for conveying, processing, and finishing pipe in 40′ lengths, in the range of sizes indicated above. All the equipment, with minor exceptions, is engineered and built by Yoder.

A pioneer plant, in commercial operation for over a year, already has demonstrated high dependability, with exceedingly low production and maintenance cost.

From an operating standpoint it is thought that the most desirable tonnage requirements for the new type of mill will lie between 50,000 and 75,000 tons per year. With the addition of more welding units, the production may easily be raised to 125,000 tons.

Initial investment, maintenance and operating cost are so low that profitable operation under favorable circumstances may be maintained *on a production as low as 15,000 tons per year, or even less.*

Notable features of the new process are: Exceedingly low scrap loss and tooling cost; wide range of sizes which can be produced in the same mill, with one basic set of tooling; short set-up time for different sizes; small amount of operating skill required. (Low scrap loss is especially important with operators not producing their own steel plate.)

Biggest single consideration, however, for production within the limits mentioned, in most cases will be low initial investment in plant equipment—only a small fraction of that necessary with any of the older processes of pipe making.

Where greater production is required, Yoder electric-weld Tube Mills, now as in the past, remain the most efficient and economical for sizes from ⅜" up to 12" O.D., or larger.

Detailed information may be had for the asking. Your inquiries will receive prompt and careful attention.

ENGINEERING YODER MANUFACTURING

THE YODER COMPANY

5539 WALWORTH AVE. • CLEVELAND 2, OHIO, U.S.A.

NEWS BRIEFS

Anti-pollution—A compromise has been reached for passage by the Alabama House and Senate of an anti-pollution bill. The main objection has come from the coal industries which were able to have certain rivers designated as "industrial streams" not subject to the law. It was pointed out by I. W. Rouzer, president of the Alabama Mining Institute, that unless this provision were incorporated 17 coal mines in the Birmingham area would be forced to shut down. However, the bill provides that the State Water Improvement Advisory Commission shall control new pollution from all sources and permits the commission to correct existing pollution which might create an emergency health hazard.

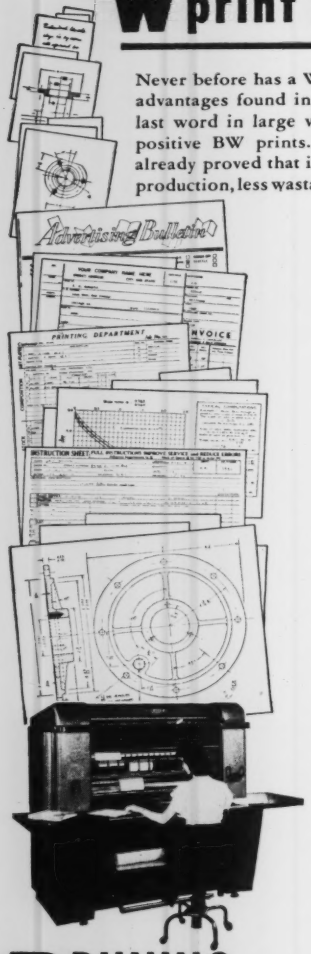
Big Printing Plant—John F. Cuneo, President of Cuneo Press, Inc., has announced that its wholly owned subsidiary, the Neo-Gravure Printing Co. of Chicago, has awarded a contract to the Turner Construction Co. for the erection of a $2,000,000 plant at Weehawken, N. J. The Cuneo Press prints Hearst magazines, Time and Life, and other publications. The new plant will be at Hudson County Boulevard East at the intersection of Park and Wilson Avenues, near the mouth of the Lincoln Tunnel. The architects are DeCherrie & Berkenblit, of Chicago. The building, will be 425 by 315 ft. and constructed of steel and brick. Work will begin at once.

Minnesota Housing—Officials of St. Paul, Minn., have the approval of the federal government to make a start on a $20,000,000 low-rent housing program R. J. Rothschild, chairman of the local housing and redevelopment authority, said the project will be started before the end of the year. PHA has granted St. Paul $350,000 to pay for architectural plans and to get the sites for buildings to house 2000 low-income families. Minneapolis has requested 1,000 such units and Duluth 500. Congress has still to appropriate the funds.

Blind Bidding—The Ohio Highway Department has reported it is highly pleased with the results of the first blind bidding by contractors on highway improvement projects. Director T. J. Kauer referred to 70 projects on which bids were opened recently, in which estimates by the department were not released before opening of the bids. Total estimates on the 62

MODEL "E" ELECTRIC VIBRATOR
MODEL "G" GASOLINE VIBRATOR
MODEL "P" PNEUMATIC VIBRATOR
VIBER
A COMPLETE LINE OF
CONCRETE VIBRATING EQUIPMENT
From the laboratory to the largest concrete dam, Viber versatility meets the varied requirements of all concrete construction.
For complete information
Please write for illustrated brochure
VIBER COMPANY
CONCRETE VIBRATORS SINCE 1931
Dept. 20, 726 South Flower Street, Burbank, California.
STanley 7-2696
LABORATORY MODEL 11
HEAVY DUTY MODEL 60
MODEL PX-6 EXTERNAL VIBRATOR
HANDLE
REVERSIBLE CASING
FULL DEPTH CONCRETE PAVING VIBRATOR

large volume BW print production



Never before has a Whiteprinter been able to offer you all the advantages found in this new Volumatic Model 93. It is the last word in large volume production of high quality direct positive BW prints. Advance models of this machine have already proved that it reduces reproduction costs . . . by faster production, less wastage, lower maintenance, simpler operation.

It has countless uses. The Volumatic, like other Bruning Whiteprinters, produces sharp, highly legible copies of engineering drawings and documents . . . anything that is printed, drawn, written or typed on a translucent medium. Its uses increase daily as more and more business and industries turn to the BW Process to eliminate the costly practice of transcribing documents, forms and records of all kinds.

It is extremely versatile. The Volumatic Model 93 produces sharp BW prints from post card size up to 42-inches wide and unlimited length. You can have light, medium or card weight prints . . . prints on tinted stocks . . . prints on film or cloth . . . prints with colored lines.

Anyone can operate it. The operation of the BW Model 93 has been simplified to the point where a girl can learn to operate it in less than an hour.

Faster operation. The new Volumatic produces BW Prints at speeds up to 105 square feet a minute. The prints are delivered dry and ready for instant use.

Completely odorless. The BW Process is completely odorless. BW machines do not require outside ventilation or exhaust ducts. They can be installed *anywhere* without offense.

It is mobile. There are no pipe or plumbing connections to tie this machine to one spot. It can be moved to convenient locations.

Uniform quality control. BW Model 93 automatically and instantaneously coordinates developing and printing speeds. Changes in printing speed never result in over or under developed prints. A further safeguard to quality is Bruning's built-in constant wattage transformer which assures uniform operation of the machine although line voltages may vary from 190 to 250 volts AC.

***Send today* for full information.** Let us send you a complete file of literature describing the new BW Model 93 and the BW mediums you can use with it. See for yourself the extreme versatility, economy and speed of this machine. There is no obligation.

BRUNING WHITEPRINTER
VOLUMATIC MODEL 93

Charles Bruning Company, Inc.
4714-34 West Montrose Avenue, Chicago 41, Ill.

New York · Newark · Boston · Pittsburgh · Chicago · Cleveland · St. Louis
Milwaukee · Kansas City, Mo. · Houston · Los Angeles · San Francisco · Seattle

Other Bruning products you should know about — Drafting Machines Sensitized Papers & Cloth • Tracing Papers • Erasing Machines • Drafting Room Furniture • Slide Rules • Surveying Instruments • and many other products.

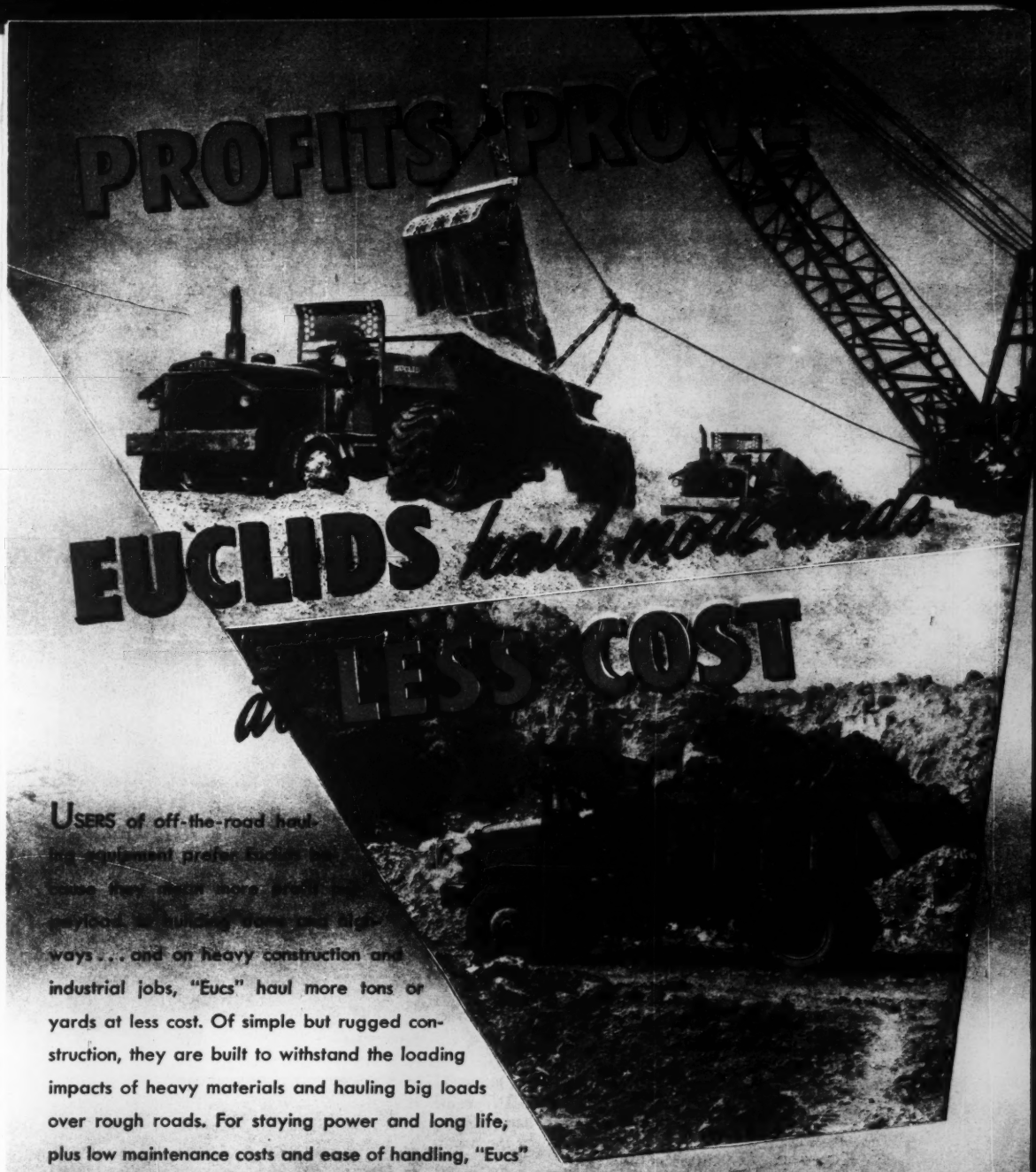
awarded projects were $4,703,759, while the total of low bids was only $4,069,233.

William Tell, 1949 Version—The "hard hat brigade" at Grand Coulee Dam's right powerhouse wasn't impressed when it read of the skill of crane operators on other projects. The men placed an egg on end between the coupling and bed plate of a generating unit. Then the powerhouse crane operator swung a 600-ton generator rotor from a temporary foundation 8 ft. away to within a fraction of an inch of the egg. No cracks.

Government Sues Contractors—In the largest suit of the kind ever filed in Houston, Tex., the federal government has entered suit against Russell E. Boyker and Jack West, local contractors, claiming that they overcharged a total of $26,073 when they built homes for 14 veterans under the Veterans Emergency Housing Act of 1946. Among other things, the suit charges the contractors failed to build some of the homes as large as the specifications called for and some windows, ceiling insulations, doors, partitions and real fireplaces, listed in the specifications, were not built. In its suit, the government asks that $26,073 be given it to reimburse the 14 veterans who bought the homes.

Low-priced Fill — Michigan's State Highway Department has made plans to stockpile 325,000 cu. yd. of sand near Mt. Clemens for a new bridge in connection with a Clinton River flood control spillway. The sand will be removed from a drainage ditch being constructed by a local drainage board and the War Department. Cost of the material to the state will be under 31¢ per cu. yd. if the contractor merely stockpiles the sand on the site of the proposed bridge. A year ago, reported a highway departmental official, fill material cost the agency $1.50 per cu. yd. at a site only one mile away.

Missouri State House—Governor Forrest Smith has signed a bill passed by the Missouri General Assembly which appropriates $3,500,000 for the construction of a new state office building at Jefferson City. The proposed building will be 12-stories with basement and a 2-story L to house an auditorium, cafeteria for state employees and hearing rooms for use by various state commissions. There will be movable partitions so that the size can be arranged to accommodate the attendance at any hearing. Steel, glass blocks, brick and aluminum will be used in the construction.



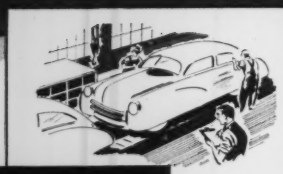
USERS of off-the-road hauling equipment prefer Euclids because they move more tons per day on highways . . . and on heavy construction and industrial jobs, "Eucs" haul more tons or yards at less cost. Of simple but rugged construction, they are built to withstand the loading impacts of heavy materials and hauling big loads over rough roads. For staying power and long life, plus low maintenance costs and ease of handling, "Eucs" are first choice of many leading contractors and industrials.

The EUCLID ROAD MACHINERY Co.
Cleveland 17, Ohio

CABLE ADDRESS: YUKLID

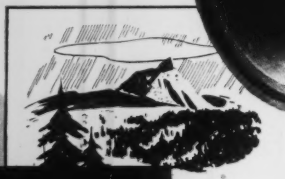
EUCLIDS *Move the Earth*

LOCK JOINT REPEAT PERFORMANCES



DETROIT—Since 1942
13 jobs—Totalling
186,950′ of 24″-72″ pipe

WASHINGTON D. C.—Since 1925
16 jobs—Totalling
117,510′ of 20″-78″ pipe



DENVER—Since 1920
23 jobs—Totalling
390,298′ of 20″-90″ pipe

NORFOLK—Since 1921
17 jobs—Totalling
511,547′ of 20″-54″ pipe

Why do they all choose Lock Joint Pressure Pipe—again and again—for their major water supply projects?

THERE ARE FOUR MAIN REASONS

1. **Great structural strength at minimum cost.**
2. **Retains its high carrying capacity for generations.**
3. **Maintenance and repair costs, if any, are negligible.**
4. **An extremely long life of unfailing service.**

"Repeat performances" in key cities are positive proof that these conservative claims are true. We shall be glad to furnish specific references in these cities or in any other of more than 150 cities and towns in the western hemisphere which enjoy the unsurpassed services of Lock Joint water supply lines.

LOCK JOINT PIPE COMPANY

Est. 1905

P.O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

BRANCH OFFICES: Cheyenne, Wyo. • Denver, Col. • Kansas City, Mo. Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. • Wichita, Kan. Kenilworth, N. J. • Hartford, Conn.

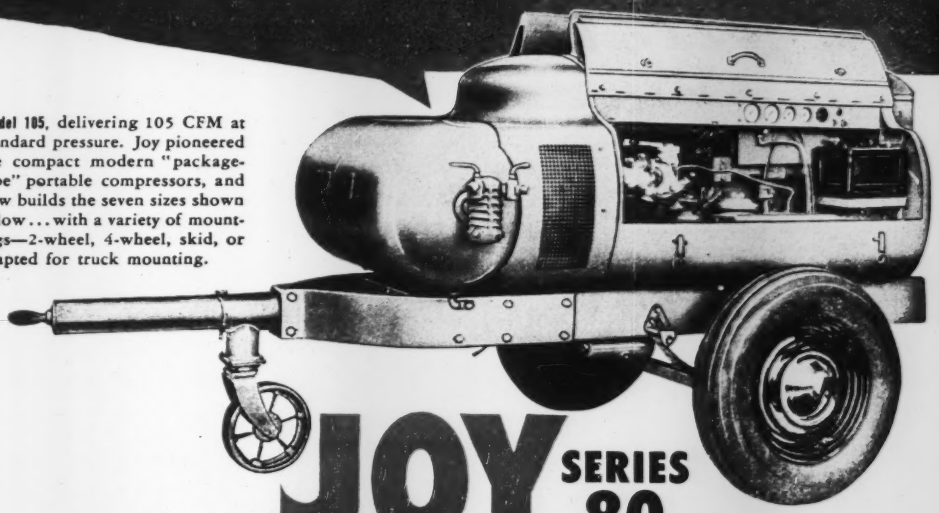
SCOPE OF SERVICES

Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

★ ★ ★

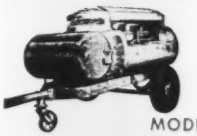
Here's *Portable* AIR POWER at Lowest Cost and Topmost Efficiency

Model 105, delivering 105 CFM at standard pressure. Joy pioneered the compact modern "package-type" portable compressors, and now builds the seven sizes shown below... with a variety of mountings—2-wheel, 4-wheel, skid, or adapted for truck mounting.

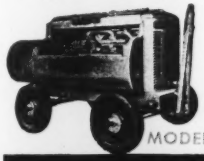


JOY SERIES 80 PORTABLE COMPRESSORS

MODEL 60



MODEL 160

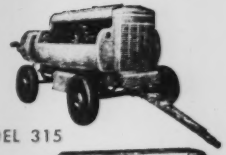


MODEL 210

Compare these Features!

- ★ 2 STAGE COMPRESSION
- ★ AUTOMATIC "ECONO-MISER" LOAD CONTROL
- ★ SEVEN SIZES—60 TO 630 CFM
- ★ NOTHING TO MATCH THEM FOR MODERN, COMPACT DESIGN—PORTABILITY—RELIABLE AND EFFICIENT OPERATION

WRITE FOR BULLETINS!



MODEL 315

MODEL 500

MODEL 630

W&D C-2074

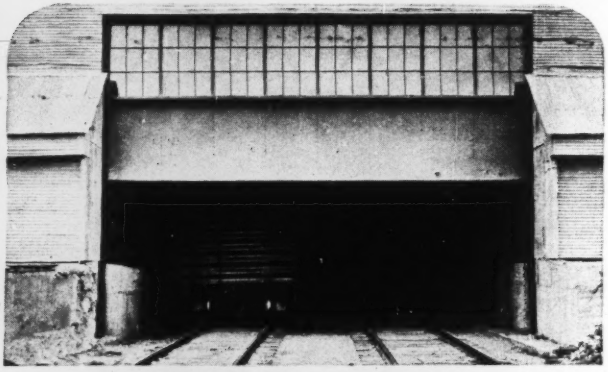
Consult a Joy Engineer

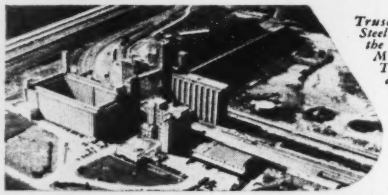
JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

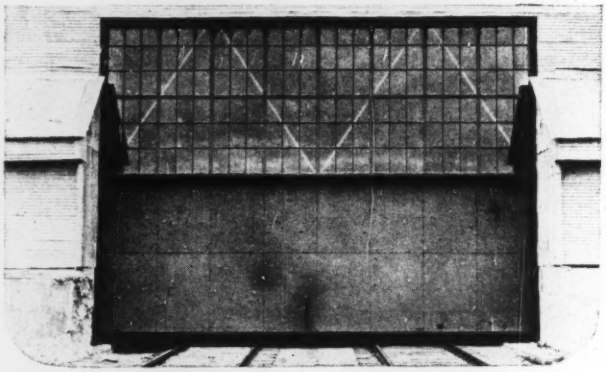
IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO

UP *in a jiffy!..*





Truscon Vertical Lift Steel Doors installed in the Tex-O-Kan Flour Mills, Fort Worth, Texas. Engineers and Contractors: Milling Engineers, Inc., Kansas City, Mo. Truscon Pivoted Steel Windows also used in this mammoth structure.



DOWN *in a jiffy!*

because it's a Truscon Vertical Lift Door

Whether operated by hand or by electricity, these Truscon Steel Doors move quickly and easily. In warehouses, freight terminals, piers, shipping rooms . . . wherever large, rugged, fast-moving doors are required...Truscon Vertical Lift Doors speed traffic, save labor, conserve heat and encourage efficiency.

The Two-Section Vertical Lift Door consists of two equal leaves, mechanically operated, which slide vertically in guideways attached to the jambs of the opening. The bottom leaf travels at twice the speed of the top leaf, and when fully open, both leaves rest one in back of the other, in a vertical position directly above and clear of the opening.

Both leaves are balanced in operation by counterweights, so that a pull of not more than 25 pounds is required on the operator hand chain, and the ratio of travel between the hand chain and the door does not exceed 6 to 1. The mechanical operator may be located at either the right hand or the left hand side of the opening. Unless shown otherwise, right hand operation will be provided. Fully automatic electrically driven operators will be furnished when so specified.

The Truscon Two-Section Vertical Lift Door requires a clearance above the lintel equal to one half the door opening height plus 1'6". In operation, the leaves move in a vertical plane only, therefore, unrestricted use of floor and platform or drive area, right up to the face of the opening is permitted to any height.

Write for descriptive literature showing actual installations, specifications, and complete descriptions of Truscon Vertical Lift Doors, to help in your planning.

TRUSCON
STEEL COMPANY
YOUNGSTOWN 1, OHIO
Subsidiary of Republic Steel Corporation
Warehouses and sales offices in principal cities

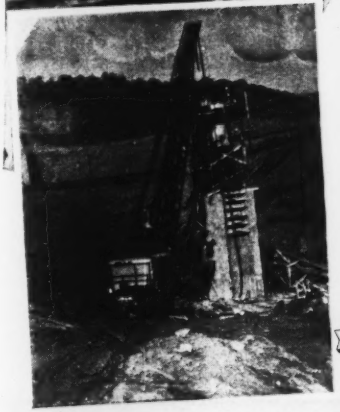
Manufacturers of a Complete Line of Steel Windows and Mechanical Operators • Steel Joists • Metal Lath • Steeldeck Roofs • Reinforcing Steel • Industrial and Hangar Steel Doors • Bank Vault Reinforcing • Radio Towers • Bridge Floors.

Downsville Dam . . . NEW YORK'S $52,000,000 DRINK OF WATER

Top — An inside job. A 2 yd. Lorain loading muck within the diversion tunnel.

Center — A Lorain Moto-Crane erects steel for east portal of diversion tunnel.

Lower Left — A Lorain-820 crane hoisting concrete buckets on one of the dam structures.



Downsville Dam, in the foothills of the Catskills, is part of a current $52,000,000 project so New York's millions will have more water "on tap."

The $13,000,000 Downsville Dam is being done by Walsh Constr. Co. (Davenport, Ia. and New York) and B. Perini & Sons (Framingham, Mass.). For years both of these names have been associated with many of the nation's biggest jobs . . . and where they've gone, so have Lorains. Between them they've purchased 49 Lorains — 25 for Walsh, 24 for Perini. Such proof of owner satisfaction is repeated again and again with contractors — large and small — all over the nation. Find out why successful contractors, who once they experience Lorain performance, keep repeating on Lorains. Just ask your nearest Thew-Lorain distributor for facts, figures and proof!

THE THEW SHOVEL CO., LORAIN, OHIO

THEW-LORAIN 50th ANNIVERSARY 1899 1949

THEW Lorain®

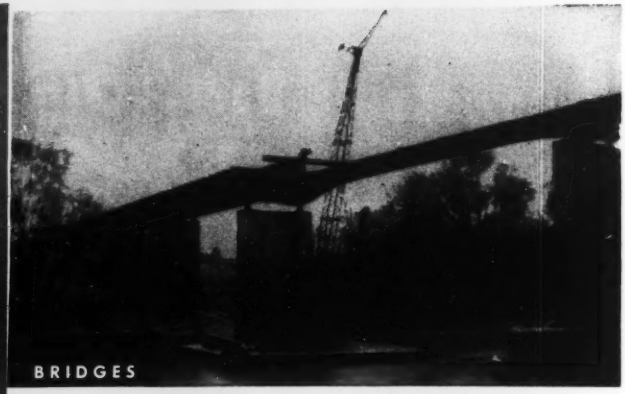
SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • HOES • MOTO-CRANES

Fabricators and Erectors of Structural Steel

• Statistics show the steel industry has facilities to fabricate and erect over two million tons of steel in 1949. American finds Allied ready with three fully equipped plants, operating under skilled control, with abundant capacity to tackle a big share of the job. Here expert crews fabricate and erect bridges and buildings from the blueprint stage to finished structures.

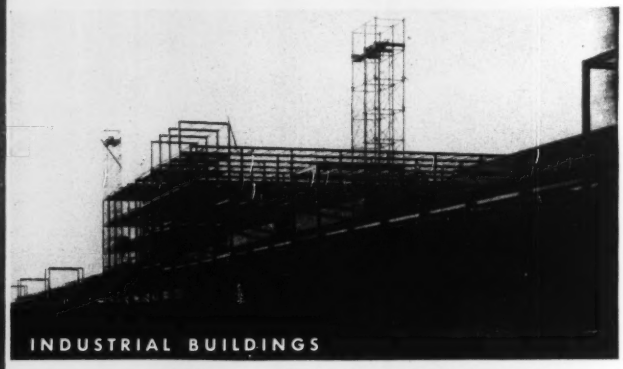
We invite you to consult Allied on any structural job that's pending . . . large or small. Send us your specifications for estimates.

ALLIED STRUCTURAL STEEL COMPANIES
Engineers • Fabricators • Erectors
20 N. WACKER DRIVE, CHICAGO 6, ILL.



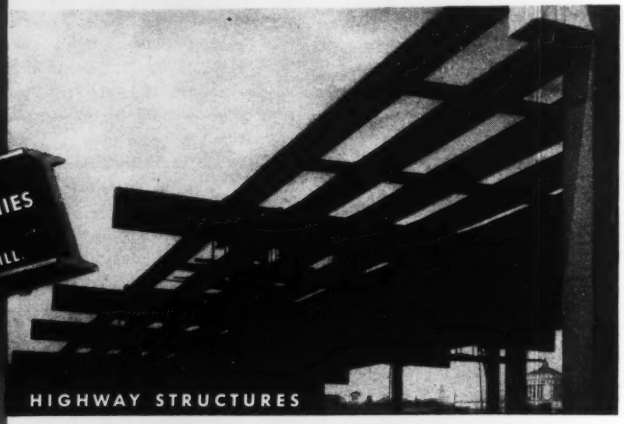
BRIDGES

Allied engineers adapt methods to the job, often employing water erection with floating equipment to shorten bridge-building hours.



INDUSTRIAL BUILDINGS

Similar equipment in each of Allied's three plants speeded up fabrication of structurals for this giant industrial plant.



HIGHWAY STRUCTURES

3250 Tons of steel were fabricated by Allied for this California highway bridge . . . erected according to Allied's precision method.

THE CONSTRUCTION WEEK

MORE VALLEY AUTHORITIES—"Next great task" of the national administration in the resources-development field is the establishment of a Columbia Valley Authority "for building up the Pacific Northwest." That was the statement of Interior Undersecretary C. Girard Davidson, who has been carrying the ball for the administration in its constant—even if not high-pressure—campaign to extend the valley authority concept throughout the nation. Davidson made this statement at last weekend's Western States Democratic Conference at San Francisco. The whole tenor of the session was indicative of continued heavy spending on western development (ENR Sept. 22, p. 5), but contractors, recalling TVA's addiction to force account construction, may be wary of the administration's CVA drive.

CEMENT FACTS—Portland cement consumption made another gain last year. Figures for 1948, recently made known by the Bureau of Mines, show an 8 percent increase over the previous year —shipments rose from 187 million to 204 million barrels. Value of the portland cement shipped took a bigger jump—$356 million to $446 million. The average cost of $2.18 per barrel in 1948 compared with $1.90 in 1947 indicates the rise in labor and other manufacturing costs. Shipments of cements other than portland went up 15 percent from the one year to the next. Production of air-entraining cement showed a marked increase, as did sulphate-resisting and white cements.

MORE STEEL EXPANSION?—Prospects are extremely bright for a steel mill located in a New England seaport. Authority for that startling statement is Frederick S. Blackall, Jr., chairman of the iron and steel supply committee of the august New England Council. "Convinced that New England can produce steel competitively," Blackall sees an expansion of New England metalworking and other small business as some of the rewards of such a venture.

EFFICIENCY, NOT SAVING—Better use of the same dollars, not the use of fewer dollars, is what Defense Secretary Louis Johnson sought when he laid off those 135,000 civilian workers recently. The fact is, total spending for national defense isn't coming down—this year or next. For instance, Congress is raising military pay—by $200 million this year—and that alone offsets savings through the lay-offs. And next year, such new items as the radar "fence" for North America, and those supersonic wind tunnels, foretell costs roughly equal to the larger savings Johnson sees ahead. Prospect is for a military budget of about $16 billion next year and in fiscal 1951, too.

WORLD BANK SWITCHES EMPHASIS—Bulk of loan negotiations now being carried on by the International Bank for Reconstruction and Development fall within the field of heavy construction. That's the way the Bank describes its dealings with Brazil, Egypt, Columbia, El Salvador, India, Finland, Turkey, Mexico, Uruguay, Belgium, Iraq, Yugoslavia and Great Britain's Colonial Development Corp. Projects for which these loans are sought include fertilizers, chemicals, textiles, land reclamation, irrigation, electric power, telephones, farm equipment, grain storage and railways. Electric power is particularly prominent. These are development, not reconstruction projects, marking World Bank's transition.

PRESIDENT STUDYING TRANSPORTATION—Representatives of the Bureau of Public Roads, Interstate Commerce Commission, Civil Aeronautics Authority, the Civil Aeronautics Board, the Maritime Commission and other federal agencies interested in transportation met with the Secretary of Commerce a few days ago to learn from him what information he needs for a report to the President on federal transportation policy. According to the National Highway Users Conference staff, the President wants the secretary to report to him by Dec. 1 on what issues will have to be resolved in order to achieve maximum effectiveness and consistency of federal programs in the transportation field. As the Senate already has an inquiry into transportation well under way, it looks as though road, rail, water and air transport might be much in the limelight next year.

ALLOCATIONS OUT—Voluntary steel allocations, a harbinger of the difficulties of postwar readjustment, die tomorrow. The idea started in April, 1948, when the steel industry agreed to make about 250,000 tons monthly available to railroad car builders. The Atomic Energy Commission jumped in to protect its programs, and the rush was on. By last May, allocations were many times as high as they had been a year previous, and went to 17 classes of users. Then, as new freight car orders dwindled, the first claimant in became the first one out. Most recent allocations were 243,000 tons. Pig iron allocations, mainly for the housing program, were ended last May.

NOW... A NEW SPECIFICATION THAT GUARANTEES BETTER CONCRETE CONSTRUCTION

SPECIFY REINFORCING BARS THAT MEET ASTM A305

for better bond at no extra cost

Be *sure* of the concrete reinforcing bars you buy! Be *sure* they have surface deformations that will provide good bonding strength! You can do this by specifying bars that meet the new American Society for Testing Materials Specification A305. *They cost no more* than ordinary deformed bars.

To meet this new specification, a bar must have ribs which are of a certain minimum height, and spaced no farther apart than 0.7 of the diameter of the bar. In addition, this specification sets forth other deformation requirements—all of which insure improved bonding characteristics.

With the expected early approval of a revision of the building code requirements by the American Concrete Institute, increases in allowable design stresses will permit reinforcing bar users to take advantage of the improved bar designs guaranteed by ASTM A305. These advantages include a saving in steel where bond is the limiting design factor, and a saving in steel, bending costs, and placing costs through the elimination of unnecessary hooks. And a more economical, more efficient, and better appearing structure is assured because of the superior bond between steel and concrete provided by bars with the new deformation patterns. Take advantage, now, of these plus values offered by A305 reinforcing bars. Don't just specify "deformed bars"—specify "reinforcing bars meeting ASTM Specification A305."

P.S. HI-BOND bars not only meet but beat Specification A305! Their reversed, double helical ribs are more closely spaced and higher than required. Get extra value at no extra cost. Specify HI-BOND! Complete information on request.

INLAND

HI-BOND

Reg. U. S. Pat. Off.

The Reinforcing Bar with the "BUILT-IN" ANCHORAGE!

INLAND STEEL CO., 38 S. Dearborn St., Chicago, Ill. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP
TIN PLATE • FLOOR PLATE • PILING • RAILS • TRACK ACCESSORIES

CONSTRUCTION TRENDS

CONSTRUCTION TODAY—AND IN THE 1920s

	Average Volume 1920-1929	Estimated Volume 1949 (e)
	(In Millions of Dollars)	
Total New Construction	9,013	19,000
Homebuilding	3,362	6,500
Farm Constructoin	266	450
Commercial Construction	867	1,125
Industrial Construction	684	1,000
Public Utility Construction	1,183	3,525
Other Private Construction	724	1,225
Public Construction	1,928	5,175

ENR Construction Cost Index 1926=100 Aug. 1949=230

(e) Joint estimates of the Departments of Commerce and Labor.

Note: Items will not necessarily add to totals because of rounding.

Source: Commerce Department and McGraw-Hill Economics Department.

Construction Prospects for the Fifties—II

Where is construction going in the next ten years?

Looking at the general construction picture—as we did in a recent Trend (ENR Sept. 22, p. 7)—it seems that construction put in place might well run to a volume of $20 billion a year in the 1950's. And there is a good possibility that it could top that figure.

Here are prospects for major construction classes.

Homebuilding—currently is running close to 900,000 units a year, with a value of about $7 billion.

The new families that will be formed in the years to come will bring a demand for about 500,000 new homes a year. In addition, there are heavy demands for homebuilding to take care of families moving from the farm, to replace substandard homes, and to raise the total number of homes so there will be a normal number of vacant homes. Enough vacancies are needed to make it possible for people to move fairly freely from one city to another, for example. How fast homebuilding goes ahead depends heavily on how much builders can cut costs. But the drop in prices to buyers of 5% to 10% that has come this year, plus the improvements in quality of 1949 homes, gives hope that builders will be able to keep whittling prices.

On top of possibilities for private housing is the new public housing program (ENR August 4, p. 23) calling for a total of 810,000 new units in the next six years. Federal aid under the act can support expenditures of $6.8 billion. It will probably take up any slack in private homebuilding in the next few years.

In all, there is a demand for—and good prospects of getting—8 to 9 million new permanent non-farm homes in the next ten years. In dollar value, that would be more than $60 billion—or $6 to $7 billion a year.

Farm Construction—housing, barns, and other facilities—is now running about $450 million a year. In the '20s, it averaged about $265 million a year. Since then, the farm population has been relatively stable, but farmers have three times the income. With the help of the new federal farm housing program farm construction may hold at $450 to $500 million a year.

Commercial construction generally booms when homebuilding does. In the '20s, it averaged less than $900 million a year. But now the U. S. has a major backlog in commercial work since few stores, garages, warehouses, and office buildings went up since the depression. This type may well reach $1.5 billion a year.

Industrial construction—now running well below its level of a year ago—can be expected to gain in the next year or two. With general business good, it might average $1.2 to $1.7 billion a year in the next ten years.

Public utility construction is hitting a peak of more than $3.5 billion this year. Electric light and power companies still have a long way to go on their program of expansion and modernization. However, telephone and railroad programs will probably taper off. Nevertheless, to keep up with normal growth, utilities will probably need to spend $2.2 to $2.7 billion a year.

Other private building is now running at $1.2 billion a year. With good business, it will probably run between $1 and $1.5 billion a year.

Public construction is rising rapidly. Federal and municipal programs have gained sharply over last year, while state activity is slightly ahead. In all, it promises to be more than $5 billion this year. Moreover, the backlog of need for all kinds of public works is large. Aside from public housing, the U. S. needs an estimated $10 billion worth of schools in the 1950's, and has an $8 billion backlog of hospital building. The country faces heavy demands for such things as water systems and sewage plants. Highway work should total between $40 and $50 billion in the 1950's.

On the whole, public construction seems likely to reach the $6 billion level in the next few years. For the 1950's, it should average above $6 billion a year.

Adding up the construction outlook this way, the industry has in prospect a volume of $18 billion to $21 billion a year in the next ten years. This is a conservative estimate. It represents what can easily be done if good business continues. But it is far short of what might be done to meet all the country's accumulated needs for construction. If the U. S. really gets to work, the 1950's will be the greatest building decade the industry has ever seen—by a good margin.

LINCOLN, NEBRASKA

There's good reason for their confidence, because Lincoln, Nebraska is protected by Mathews Modernized Hydrants—and that means safety *plus*.

These great hydrants are the last word in simplicity and serviceability. Water cannot reach the operating thread—no risk of ice jamming it—no risk of deterioration from rust or sediment. The revolving nut is shielded against rain, snow and dust. All working parts are contained in a removable barrel which can be replaced in a jiffy if the hydrant is broken by a truck. And the damaged hydrant cannot leak, because the main valve opens *against* water pressure.

Send for our illustrated folder which tells you the many distinctive features that make Mathews indispensable for every safety-minded community.

OTHER MATHEWS FEATURES: Head can be turned 360° • Replaceable head, nozzle outlets easily changed • Nozzle levels raised or lowered without excavating • Protection case of "Sand-Spun" cast iron for extra strength, toughness, elasticity • Operating thread only part to be lubricated • Stuffing box cast integral with nozzle section • A modern barrel makes any Mathews good as new

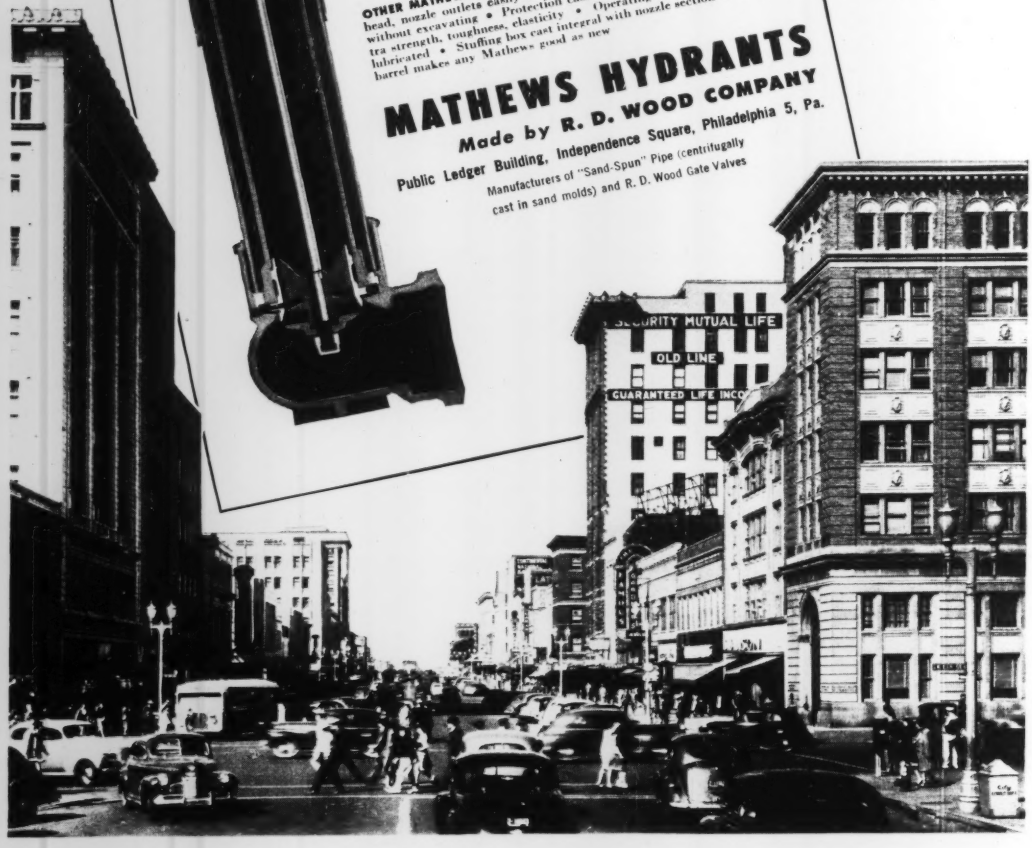
"One of America's Safest Cities"
THE MATHEWS FIREMEN SAY

MATHEWS HYDRANTS

Made by R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves



Permanent Track

F. S. Schwinn, president of the American Railway Engineering Association, sees no reason why railroad track should not attain a permanence comparable to bridge structures. Speaking to the American Railway Bridge and Building Association and the Roadmasters' and Maintenance of Way Association in Chicago some days ago, Mr. Schwinn made that observation after noting the steps made in the direction of greater permanence through roadbed stabilization and the use of treated ties and longer rails. Construction of track that would be permanent has been the dream of railroad maintenace men for many years. A few attempts to build such track have been made, but have not proved successful, chiefly due to cost. But now that maintenance costs have gone up again, such planning becomes less academic. Recent experiments in stabilizing railroad embankments with sand piles and with cement grout may point the way toward a reasonably permanent track structure that will be more resilient than the heavy concrete slabs used in the earlier tests.

Great Engineer and Citizen

Ralph Budd retired as president of the Chicago, Burlington & Quincy Railroad on Sept. 1 at the age of 70 under a retirement plan that he had inaugurated. But his unusual combination of engineering and executive ability was too valuable to be shelved as the result of the workings of any arbitrary rule, and so Chicago sought him out to head its Transit Authority. The new task Mr. Budd has taken on could be more demanding in many respects than the one he is giving up; only a man unafraid of difficult problems would have taken it on at the age of seventy.

Willingness to take on new and difficult tasks has been a characteristic of Ralph Budd in the fifty years since he began work in the engineering department of the Chicago Great Western. While working on an extension of the Rock Island in the early part of this century his organizing ability came to the attention of John F. Stevens. When Stevens went to Panama to take charge of the great earth-moving job on the canal he picked Budd to head the railroad construction and maintenance operations that were to be a major factor in the success or failure of that project. Then three years later, when Stevens undertook the difficult task of building the Oregon Short Line, he sent for Budd again. There Budd came under the eye of James J. Hill who, when the Oregon work was nearing completion, named him assistant to the president and chief engineer of the Great Northern Ry. Six years later he was elected president of the road. The Burlington directors sought him out in 1932 to head that road.

This spectacular rise by a naturally modest man should bring encouragement to young engineers to whom the top now appears to be a long way off. And Ralph Budd's career should offset the advice of those who caution young men against taking jobs in remote places far from the watchful eye of "top management," or those who stress the importance of security. To young Budd in Chicago a job on a new railroad line in Missouri must have seemed remote, and certainly it offered no security. The new line would be finished in about three years and the construction men would need to find new jobs.

Ability and initiative and especially willingness to accept responsibility never go unobserved, regardless of how remote the job is. Every worthwhile executive is on the lookout for new blood.

And for the more mature engineers this observation with respect to the career of Ralph Budd might be made. That career has been marked by distinguished public service as well as rapid advancement in his chosen field of activity. As advancement made it easier for him to accept outside responsibilies he never resorted to the excuses he could have made for not accepting the calls made on him. His new assignment rounds out that record of unselfish public service.

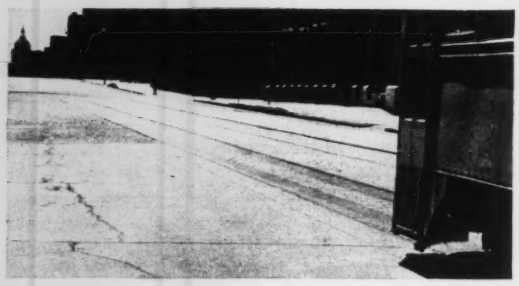
Unified River Developments

Engineers and scientists assembled at Lake Success for the recent United Nation's Scientific Conference on the Utilization and Conservation of Natural Resources were told of the loss resulting from what the speakers characterized as haphazard river-basin development. The need for overall planning for each river system was cited as being of increasing seriousness.

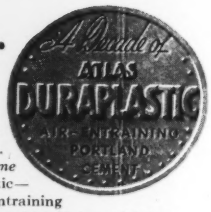
No one will deny the need for such over-all planning, but it is manifestly unfair to imply, as do the most of today's outspoken advocates of multiple-purpose planning, that the lack of such planning is due to shortsightedness on the part of those who did the most river development work in this country in the past—the Army Engineers and the private electric utilities. Some of the best planning done to date for integrated river development was done by those agencies.

Nearly 30 years ago the Army Engineers recommended to Congress that plans be made for the unified development of the water resources of all major rivers in this country. That recommendation resulted in the passage in 1927 of legislation authorizing what now are known as the "308 Reports."

The need for unified river development is not a new discovery. It is only receiving increasing attention because funds and authority now are being more freely supplied to put it into practice.



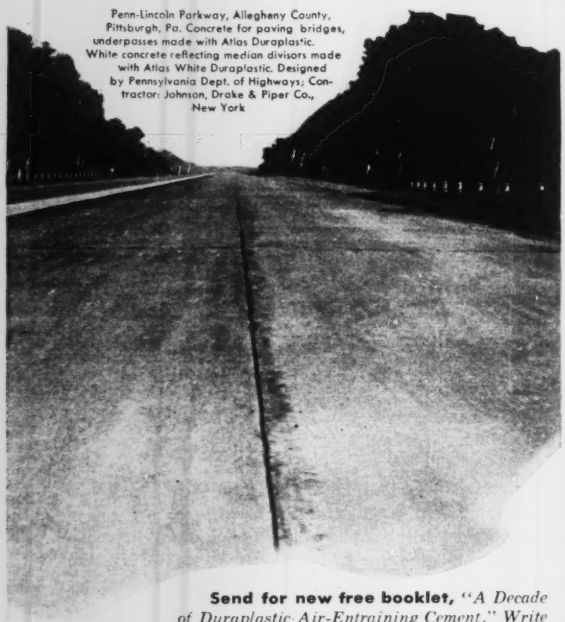
Ten Years Ago...



in August, 1939, this concrete test paving was laid in Second Avenue North, Minneapolis. The badly scaled section of roadway in the background was made with regular portland cement. The foreground section, *laid at the same time*, was made with Atlas Duraplastic—the first commercial use of the air-entraining portland cement originated and developed by Universal Atlas.

Both sections, subjected to the severity of ten Minneapolis winters and to heavy applications of de-icing salts, are shown above as they appeared in July, 1949 – convincing proof of the characteristic durability of Duraplastic concrete, of its high resistance to freezing-thawing weather and the scaling action of de-icing salts. Longitudinal structural crack shows some ravelling. Note perfect transverse joint.

Today.... No doubt of *durability*... in concrete paving made with ATLAS DURAPLASTIC*



Penn-Lincoln Parkway, Allegheny County, Pittsburgh, Pa. Concrete for paving, bridges, underpasses made with Atlas Duraplastic. White concrete reflecting median divisors made with Atlas White Duraplastic. Designed by Pennsylvania Dept. of Highways; Contractor: Johnson, Drake & Piper Co., New York

From its initial installation to the succeeding score upon score of successful paving installations over the past ten years, there is abundant evidence that Atlas Duraplastic cement fortifies concrete against freezing and thawing — renders it highly resistant to the scaling action of de-icing salts.

Clinching proof was revealed at the first session of the American Concrete Institute Convention held in New York in February, 1949. Devoted to "problems in concrete paving surface durability," the session recorded a significant unanimity of opinion that air-entrained concrete resists pavement scaling from salt treatment. A leading construction magazine commented, "... the use of entrained air, insofar as designers and contractors are concerned, would seem to admit of no more argument than the use of the water-cement ratio."

Experience shows Duraplastic (1) requires less mixing water for a given slump; (2) makes concrete more plastic, more cohesive, more uniform; (3) minimizes segregation and bleeding; (4) produces more workable concrete that dumps and screeds easily; (5) permits finishing closer to paver, and allows earlier protection for curing.

For pavement needs of today and tomorrow, Duraplastic offers *better concrete at no extra cost*. It provides the precise amount of air-entraining agent interground with the cement for satisfactory field performance. It complies with ASTM and Federal Specifications, sells at the same price as regular cement and calls for no unusual changes in procedure.

Send for new free booklet, *"A Decade of Duraplastic Air-Entraining Cement." Write to Universal Atlas Cement Company, (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17.*

OFFICES: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

**"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ENR-D-93

ATLAS DURAPLASTIC

TRADE MARK REG. U. A. C. CO.

AIR-ENTRAINING PORTLAND CEMENT

MAKES BETTER CONCRETE AT NO EXTRA COST

THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

ENGINEERING NEWS-RECORD

SEPTEMBER 29, 1949 VOL. 143 NO. 13

Power construction outlook nears time for decision

Electric utilities, with 1947-1951 expansion program in hand, face need to decide soon on their construction program for 1952—Outlook is believed good

Decision time is at hand for the construction industry's prospects of continued rich business in the electric power field.

Especially as it concerns steam-electric power, the next six to nine months will find the electric power industry making decisions as to economic prospects in 1952. And on these decisions will rest construction's prospects of more power facility business. It's a line which has kept consultants and builders humping for four and one-half years.

Power construction has boomed

Power has been the backbone of industrial building this year. But a shift in emphasis of the power program is at hand, and its extent is of concern to construction.

Since power expansion really got under way in 1947, electric systems have been building toward two goals. First, they've been trying to build for the postwar loads which grew substantially farther and faster than anyone ever thought they would. Their second goal has been adequate system reserve capacity. The capability margins the power business took into the war vanished under the impact of five years' load growth and relatively little wartime construction to meet it. When postwar loads bounced up so spectacularly, that just complicated the reserves problem. After going into the war with a most conservative reserve, the industry last winter got down to a tight 5 percent reserve nationally, perhaps one-quarter of what was the customary reserve before the war. In some systems, the margin was even closer than that.

Planning for load growth, now

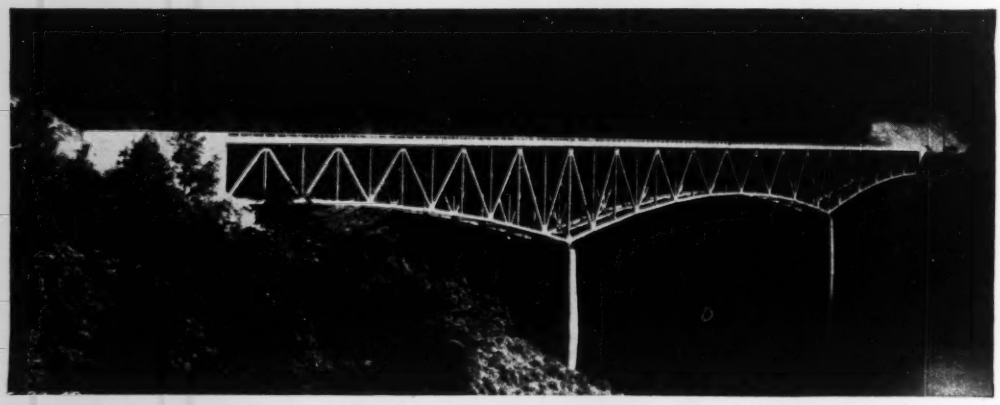
So great has been the postwar expansion, planning and ordering, which was well started even at V-E Day, that most of today's power expansion is being aimed only at one goal—that of caring for normal load growth. The power business hasn't yet got the 15 percent (rule of thumb) reserve margin to which it has been building since the war. It won't have it before the end of 1951. But the planning, ordering and scheduling which industry leaders insist will meet that margin at that time is done. There are perhaps 30 days left in which a power system can decide to put in a major steam-electric generating unit and still get it on the line for the winter peak which a majority of systems can expect in the pre-Christmas week of 1951. It's true that very small steam turbines could be ordered substantially later and still make it. But few utilities are installing such machines these days. Relatively, they're much more expensive than the large ones.

For the next three months, power systems will be making up their 1950 budgets, and this too will indicate the extension possibilities beyond 1951. If new plants are to go on the line in 1952, sites will have to be acquired no later than 1950. Provision will have to be made to finance the plants and equipment. Expansion projects for 1952 whose first budget entries are made in 1950 may be cancelled, of course. But if there's much chance that they're going ahead, some budgetary provision almost has to be made in 1950, and it's in the next three months that power companies will be deciding whether or not to make them. Basis for these decisions, in general, won't be reserve capacity. The industry's current load forecasts show that in all regions but two, this 15 percent margin will have been achieved by December, 1951.

Only other major basis, then, on which to plan 1952 expansion will be the prospects for additional load on the line that year which will require additional capacity. To some degree, the need for more efficient capacity—to permit the retirement of old, high-cost generation, or its deactivation for stand-by use—will continue to bolster

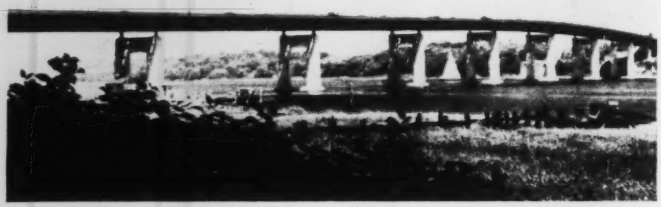
(*Continued on page 29*)

LEFT KEYWAY for Montana's Hungry Horse dam towers over workmen completing excavation. First of 3,000,000 cu. yd. of concrete is to be poured this month.



WINNER, Class 1, is Tennessee's Watauga River bridge, designed by Tennessee Valley Authority, built by Nashville Bridge.

American Institute of Steel Construction's Verdict:



RAYMOND E. BALDWIN bridge, Connecticut, won Class 2 Honorable Mention. Designer: State Highway Department. Consultants: Howard, Needles, Tammen & Bergendoff. American Bridge Co. built this bridge.

Two prize awards were made last week for the most beautiful steel bridges opened to traffic in 1948. They were presented by the American Institute of Steel Construction, and were chosen from 51 entries by a jury of architects and engineers.

AISC recognizes four classes in its annual competition: Class 1, fixed bridges with spans 400 ft. or longer; Class 2, fixed bridges with spans under 400 ft. costing more than $500,000; Class 3, fixed bridges with spans under 400 ft. costing less than $500,000; and Class 4, movable bridges.

This annual contest has been conducted by AISC since 1928.

St. Johns River cutoff plans nearly complete

Plans are now nearing completion for the construction of a St. Johns River cut-off which will facilitate navigation of deep-draft vessels to and from the harbor at Jacksonville, Fla. The proposed cut-off will be about three miles long and cost approximately $2,500,000. Work will be done by the Corps of Engineers.

The cut-off will be dredged to a depth of 34 ft. below mean low water and to a bottom width of 500 ft. The flares at each end of the cut-off will be widened to 1,000 ft.

Alignment of the navigation channel on the south side of the cut will be protected by an earth dike with a minimum top width of 400 ft. Within this dike, a rubble stone water control structure will be constructed to retard tidal cross currents and to permit passage of small vessels. The control structure also will promote water circulation in Mills Cove.

It is estimated that approximately 16,000,000 cu. yd. of material will be excavated.

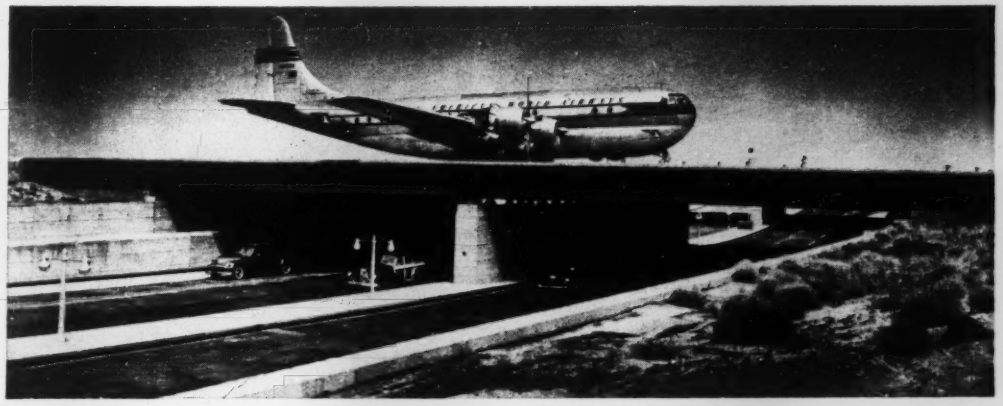
N Y. water pollution body urges treatment plans now

The Water Pollution Control Board established within the New York State Department of Health in accordance with the recently-enacted Water Pollution Control Act already is taking definite steps to enforce the provisions of that act looking eventually to complete elimination of pollution.

There are more than 60 municipalities in the state which now are discharging untreated sewage into streams and other waters and have not yet had plans prepared for sewage treatment facilities. The first effort of the Water Pollution Control Board is to make those communities familiar with the provisions of the law and to induce them to take advantage of the opportunity to obtain state aid in the preparation of plans for sewage treatment works before the end of the fiscal year, April 1, 1950.

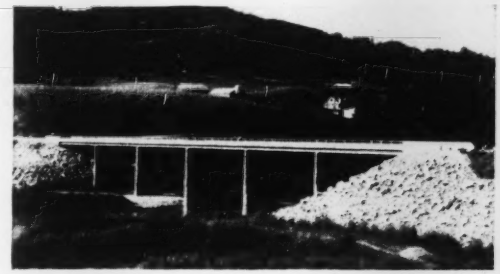
There is another group of about 27 municipalities—which already have treatment facilities that need major improvements or enlargement—which have not yet had plans prepared. The board is taking the matter up with those towns and cities and urging them to take advantage of the opportunity to get state aid in their planning.

Later, it is probable that action will be taken to compel the making of improvements to abate objectionable and dangerous pollution. At present, the board's efforts are largely persuasive and appeal to the common sense and business foresight of the municipal officers concerned.

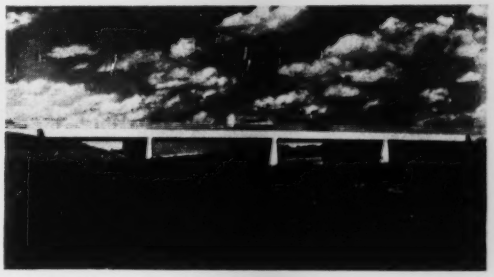


WINNER, Class 3, is New York City's airport overpass, designed by Clarke, Rapuano & Holleran, built by American Bridge.

These are America's most beautiful bridges of 1948



ROAN CREEK bridge, Tennessee, won Class 3 Honorable Mention. It crosses part of Watauga Reservoir. Desgined by TVA also, it was built by American Bridge Co.



OVERPASS at 159th St., Calumet superhighway, Illinois, won Class 3 Honorable Mention. Designed: Cook County Highway Department. Bethlehem Steel built it.

Higher gasoline tax helps Kentucky roads

Kentucky's high standing among the states in road mileage and expenditures, according to Highway Commissioner John A. Keck, is due to the 2-cent increase in the gasoline tax. Kentuckians and visitors bought 14,000,000 more gallons of gasoline during the first six months of 1949 than in the corresponding period of 1947, the last full year before the tax increase.

A recent report of the U. S. Bureau of Public Roads indicates that for the first seven months of this year, Kentucky stood third in miles of road work under contract (2,044 mi.) and fifth in money allocated for road construction.

"Our new rural program accounts for about 1,035 miles and involves the expenditure of about $10,000,000. The whole program actually under construction, which includes some contracts let last year, totals $26,762,000," according to the highway commissioner.

Mr. Keck estimates that Kentucky needs $575,000,000 worth of work done on all its roads in the next 10 years.

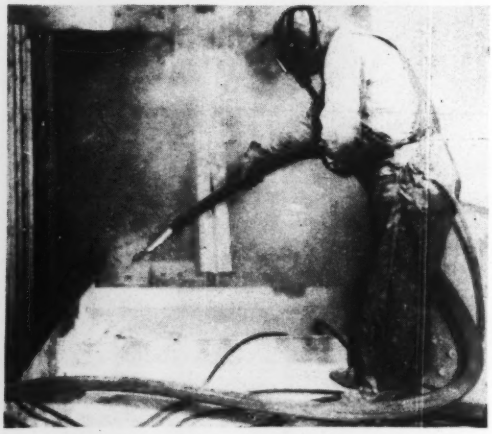
Big Tunnel Work Starts—Work is starting on the $8,500,000 Baytown Tunnel on the lower Ship Channel near Houston, Tex. The first dredging is at Spillman Island about 1½ miles upstream from the La Porte-Baytown ferry crossing. Brown & Root has been awarded a $5,000,000 contract on the first section of the work which will include hydraulic dredging of the trench for the nine-tube sections which will total 2,600 ft. in length. Consulting engineers on the job are Parsons, Brinckerhoff, Hall and McDonald, New York.

Investigate sewer gas in San Jose, Calif.

Thomas McGowan, engineer for the San Jose, Calif., health department, has launched an investigation into the discoloration of buildings said to be due to sewer or industrial gases. There have been reports of damage to homes and other structures. Numerous complaints were received that houses painted white had turned brown following smoggy atmospheric conditions in the area.

The theory advanced as to the cause has been that hydrogen sulphide resulting from the dumping of raw sewage into San Francisco Bay has reacted on paint with a white lead base. The investigation will include mapping of the city to show reported damage and the possible sources of smog, including major industrial plants.

San Jose citizens vote Nov. 8 on a $4,000,000 sewage plant bond issue.



WORKMEN ARE FINISHING the first cleaning Parker Dam's (Cal.) 50 x 50-ft. gates have had since they were installed 10 years ago. The $40,000 job, which will include rust-proofing, is done inside a floating cofferdam, above left, anchored to the upstream face of the dam. This made it possible to get at both faces of each gate without loss of water. After old paint and rust had been sandblasted, above right, the gates got a primer coat and then two coats of coal-tar enamel were daubed on at 500 deg. F. The enamel was heated in insulated electrical buckets, taken to the work site and kept hot electrically. With temperatures running 115 deg. in the cofferdam, workmen drew premium pay of $2.50 hourly, and did much of the job at night. Six-inch daubing brushes were used to put it on, but the heat ruined them in about 20 min.—more than 3,000 were used in the four-month job. The enamel was applied stroke-over-stroke to obtain a shingle effect. Specifications called for a 3/32-in. coating. It was inspected electrically. The enamel dries hard and smooth, like glass, with stroke ends giving a "feathered" appearance.

Cement-treated base tried out on Ohio road

Highway officials and road builders from many states are visiting Granville, Ohio, to witness a highway paving technique new to Ohio and the Midwest. Director T. J. Kauer says that this new "cement-treated base" is the first of its kind in the state, and may be particularly good for economical, secondary road construction.

The job is being done on Route 37, south of Granville, on 2.7 miles of paving. Preparations have been made to show the process by stages, first the mixing of the cement with bank run gravel from the Newark Sand & Gravel pit, in the pug mill of the Newark Asphalt Co., in nearby Newark; the transporting of the mix by truck to the job; then its transfer to the dump truck spreader, which distributes it evenly over the road surface; and then the rolling of it to a 6-in. thickness by a 12-ton, 3-in.-wheel, smooth roller.

About half the cement a regular concentrate job takes is required for a cement-treated base. The mix comes to the job with the consistency of damp gravel, and, when rolled into place, is ready for the "tack coat" which seals in the moisture until the asphalt surface is added, thus promoting the necessary curing.

Specifications of the State Highway Department for the Route 37 job, require the strength sufficient to withstand a load of 2,000 psi at the age of 28 days.

The CTB paving provides for a traffic count of 1,000 vehicles a day, whereas a soil-cement paving made by mixing cement with soil of the road surface, provides for 500 a day, and the regular concrete pavement provides for all traffic densities over 1,000 a day.

Outside work banned for road department workers

Frank D. Merrill, New Hampshire highway commissioner, has announced that in the future, personnel in his department will not be permitted to accept outside jobs. This decision was influenced by an arrangement previously made in connection with the cost of preliminary engineering for the Kelley's Falls bridge in Manchester. A staff member of the department had been retained as a consultant by the city. Later, it appeared that the legislature had passed a bill under which the state would pay half the cost of this preliminary engineering. Commissioner Merrill held that this would give double pay to the individual retained, who is already on the state payroll.

To check monoxide fumes in West Rock Tunnel

A mechanical "watchdog" will guard motorists against dangerous concentrations of carbon monoxide from exhaust fumes in the 2,000-ft. long West Rock Tunnel on the Wilbur Cross Parkway, U. S. Route 1, at New Haven, Conn. The device, which can detect as little as one part of the deadly gas in a million parts of air, has been shipped from Pittsburgh for installation in the tunnel, now nearing completion.

The primary purpose of the instrument, according to the manufacturer, Mine Safety Appliances Co., is to control the tunnel's electrical ventilating equipment. It samples air continuously from near the tunnel entrances and checks it for carbon monoxide gas. When concentrations exceed a predetermined limit, the instrument activates ventilating fans that deliver fresh air into the tunnel at a rate sufficient to maintain safety.

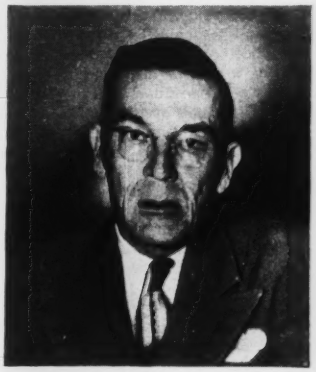
Castro Electric Co., New Haven, is installing the recording devices and ventilating system for West Rock Tunnel, which is being built for the Connecticut State Highway Department. Similar devices are in use in the Holland Tunnel, New York, and in all tunnels on the Pennsylvania Turnpike.

More money, tools, faster planning needed for public works programs

American Public Works Association is urged to step up planning to insure ample construction backlog—W. O. Jones new president

Planning, financing and expediting the construction of a wide variety of state and municipal projects continues to be the chief concern among public works officials—even more so than during the first postwar years. Increasing traffic demands call for more large-scale street construction, faster reconstruction, and improved parking facilities, while residential expansion increases the burden of furnishing more and more sewage treatment and water supply facilities.

Roundtable and panel discussions of these problems at the 55th annual Public Works Congress last week in Kansas City, Mo., were reminiscent of similar discussions at the first postwar meetings of the American Public Works Association. In addition, it was brought out that public works officials today realize more than ever before the need for decreasing construction costs through better management, more efficient equipment operation and maintenance, and improved methods of cost accounting.



W. O. Jones of Fort Worth, Tex.

Better machines needed

What is needed—as brought out in one session on motor equipment, headed by F. M. Galloway, town engineer, Montclair, N. J.—are: improved multi-purpose machines that can remove snow in the winter, load leaves efficiently in the fall, and handle materials for certain street repairs in the summer.

Presenting a direct challenge to the public works officials' contention that more improvements are needed in many types of equipment, the equipment display held in conjunction with the three-day meeting was by far the largest to date. That the manufacturers are keenly interested in public works needs was evidenced by the large number of exhibitors. There were 70 exhibitors at the meeting.

Also of unusual interest was a joint Corps of Engineers—Bureau of Reclamation display showing current and proposed flood control and river development projects. Other federal agencies having displays in connection with the equipment show were the General Services Administration, the U. S. Army Air Force, the U. S. Navy Organized Reserve, and the U. S. Bureau of Yards and Docks.

The public works officials also want —as expressed in resolutions adopted in the closing session of the three-day meeting—a more equitable distribution of road-user funds to municipalities for the construction and maintenance of urban streets, highways and expressways.

A second resolution urged that more federal funds be made available to states and cities for surveys, design plans and other work preliminary to the construction of public works—and for more systematic exchange of information between construction agencies of the federal government and those of the states and municipalities, so that each may benefit from the experience of the others.

The necessity of effective long-range planning—at the federal, state and municipal levels—was crystallized in a panel discussion, moderated by Gov. Val Peterson, of Nebraska.

Urging the rapid expansion of public works planning, if only as a safeguard in case of a recession, James F. Follin, acting deputy administrator, General Services Administration, declared that greater cooperation is needed in all levels of government.

Backlogs should be prepared

Alvin Pasarew, director of the Maryland State Planning Commission, also urged the continued preparation of sizable backlogs of public works plans. At the same time, said he, financial studies should be made as to the state's ability to pay for these needed improvements. And, periodic reviews should be made of the state's principal sources of income with particular attention centered on anticipated changes in the magnitude of revenue.

The six-year public improvement plan, already in effect in several cities, was endorsed by E. N. Bacon, executive director, City Planning Commission, Philadelphia, Pa. Its chief advantage is that it can be revised yearly, with a year added each time, and the actual accomplishments of the six previous years evaluated against the earlier program.

According to Mr. Bacon, the basic concept of public works planning is undergoing a distinct change. Instead of dealing primarily in terms of sewage, water and highways, the public works planner today is giving more attention to arresting the decay of central city areas.

In an economic appraisal of public works planning, Robinson Newcomb, of the Council of Economic Advisers, Washington, D. C., declared that public spending is as necessary as private. Yet, said he, we are being constantly told that public expenditures are a drain on the economy and should be held to a minimum. On the other hand, there is little basic difference between the importance of private and public service. Both are desired by the public and paid for voluntarily.

Awards and new officers

Nine men received the veterans' award of the association, in recognition of 30 years with one city. Three were from Canada: W. C. Miller, St. Thomas, Ont.; F. C. Askwith, Ottawa, Ont.; and Henry Hadley, Verdun, Que. The other six recipients of the award were: C. A. Hechmer, Hyattsville, Md.; R. S. Chapin, Washington, D. C.; H. M. Beaumont, Philadelphia, Pa.; J. W. A. Bollong, Seattle, Wash.; J. M. Powell, Elyria, Ohio; and A. M. Kirk, Chicago, Ill.

W. O. Jones, city manager, Fort Worth, Tex., was elected president of the association, succeeding William A. Xanten, superintendent, Division of Sanitation, Washington, D. C. Wm. S. Foster, engineering editor, AMERICAN CITY magazine was re-elected vice-president (Eastern area) and Carl Froerer, city manager, Alameda, Calif., was named vice-president of the Western area.

New directors are: E. J. Cleary, executive director and chief engineer, Ohio River Valley Water Sanitation Commission, Cincinnati, Ohio; Sol Ellenson, director of public works, Newport News, Va.; and Geo. R. Thompson, city engineer, Detroit, Mich. Allan H. Rogers, superintendent of public works, Garden City, N. Y., is the new treasurer.

Senate OK's $100 million for public works planning

The Senate last week acted on an Administration proposal to foster local public works planning by authorizing appropriations up to $100 million over a two-year period for the use of nonfederal public works agencies (ENR July 14, p. 25).

Purpose of the bill is to encourage states and other nonfederal public agencies to maintain an adequate reserve of fully planned public works readily available in order that construction may be started promptly when economic conditions permit. This will be accomplished by authorizing advances, during a period of two years from the date the act is approved, to the states and agencies for financing the cost of surveys, engineering investigations, and plans preliminary to the construction of local public works such as schools, public buildings, sewerage works, water supply systems and other local public works. Therefore, states or local agencies would be permitted to obtain the necessary planning funds and proceed with all planning phases without waiting for financing arrangements.

Under the bill, funds authorized would be allocated by the General Services Administrator on the following basis: 75 percent in the proportion of state population to the total U. S. population; 25 percent in accordance with the needs of the states as determined by the administrator. The administrator would also be permitted to reallocate any remainder of the initial state allocations which cannot promptly be utilized.

The bill stipulates that all advances will be repaid in full without interest by those agencies, if and when construction of the works planned with those advances is undertaken or started. No advances will be made for any individual project unless it conforms to an overall state, local or regional plan approved by competent state or local authorities. The bill specifically provides that the making of these advances shall not in any way commit the Congress to appropriate funds to undertake the construction of any public works so planned.

In reporting out the bill, the Senate Public Works Committee cited the great need for public works planning. Postponement of public works activities during the war period has accumulated a large need for building.

Lake Tana talks

Discussions are expected soon by representatives of British, Egyptian and Ethiopian governments on construction of a dam at the outlet of Lake Tana, headwaters of the Blue Nile.

LARGE PLANT EXPANSION, nearing completion at Utica, N. Y., will give Chicago Pneumatic Tool Co. up-to-date manufacturing capacity. The $5,000,000 building, about 500 x 1,000 ft., contains two horseshoe production lines, air-conditioned, soundproofed laboratories. Metal chips and coolants are handled automatically, the building is fire-proofed, equipped with overhead conveyors, modern lighting, a 500-seat cafeteria, first aid rooms and recreation areas. National Engineering Co. designed it.

Road over mountain nears completion in Va.

A public roadway memorial to the late State Senator B. F. Buchanan, of Marion, Va., is attracting much attention. It scales the rugged slopes of a southwest Virginia mountain never before conquered by road-builders. It's scheduled for early completion by construction forces of the State Highway Department.

When the highway is opened to traffic late this year, motor vehicles for the first time in history will cross 3,500-ft. Brushy Mountain in Smyth and Tazewell counties.

The new road—part of the B. F. Buchanan Highway, State Route 16, will slash 10 miles and many minutes from north-south motoring between Marion and Tazewell.

State convict road forces commenced construction last year to close the seven-mi. gap between Marion and Tazewell. With the exception of one small section, the road has been blasted through the mountain face and both rough and fine grading has been completed.

The rocky northern face of Brushy Mountain offered a "one-to-one" slope. For every horizontal foot, the slope dropped a vertical foot. A tentative centerline for the road down the northern slope had been plotted from aerial surveys. The country was too rugged for ground surveys in any great detail.

Superintendent J. O. Shepherd said: "It was tough going in the early stages. The lack of any sort of road or trail made things particularly difficult. Fuel to run the power drills was hauled up the mountain by hand. There was no way of getting a truck up those rocks."

The grade for the most part is only four to six percent—a rise of 4 to 6 ft. for every 100 ft. of travel. This relatively gentle grade was achieved with long, sweeping hairpin turns. The road itself will be 20 ft. wide from shoulder to shoulder.

In constructing the highway down the steep northern slopes, forces cut a shelf out of the mountainside to carry the inner half of the road. The excavated materials were used to build up the outer rim.

Excavation, grading and the bridge across Laurel Fork of the Holston River, when completed, will cost less than $200,000.

Assisting Shepherd in building the highway is J. C. Wood, a veteran of mountain road construction. The project is under the general direction of O. T. Aichel, resident engineer at Abingdon, and J. D. Keeler, Bristol district engineer.

Power construction prospects studied

(*Continued from page 23*)

1952's power construction outlook. Mostly, though, this contingency has been pretty well cared for in the plans already made.

Under 1947 and 1948 conditions, power systems would be committing themselves right now—as some have—for their 1952 building. Order boards of the major steam turbine manufacturers were full. New orders went to the end of the line—a long line. Manufacturers' production capabilities were less. It took up to 36 months to get units, six more to install them.

But there have been some changes from the helter-skelter of recent years. There's new turbine capacity operating. Steel is much easier to get. Labor's producing more. Standardized turbine designs have speeded output. A weak price structure has induced buyers to hold off.

Faster deliveries now

So the delivery time of big turbines, and smaller machines, has been cut. Last July, one consultant reports, 30,000 kw. units or larger were available in 26 months. Another says there are open spaces on order boards for 16 to 18 month delivery of standard turbines as large as 60,000 kw. For the biggest machines—which have become much more popular—the lead time between order and turbine is longer. Now you can figure on four months for installation.

All this means utilities don't have to commit themselves as early, today, on plant expansion as they've had to in the past four years. And with this year's business cycle, many of them haven't been moving any faster than required.

Decisions early next year

Thus it is that during the early months of next year, utilities will be poring over the prospects for 1952, trying to forecast loads then, how business will fare, how load characteristics may change.

Some systems will have to decide earlier than others. Particularly in the south and on big city systems, where air conditioning load reaches major proportions, the decisions will have to come early next year, if not sooner. If a system's peak occurs in summer, the 1952 plants will have to be operating in the summer of 1952. If the system peak is a winter peak, the decision may be postponable somewhat longer. But northern systems will have to allow for bad weather slow downs. And there's less "outdoor plant" construction possible up north than some southern systems have been able to use.

Too great delay dangerous

Some consultants, designers and builders—even manufacturers—take a dim view of delay in placing orders. Outside of their normal business reasons for doing so, they make some realistic points against delay. Suppose, they say, the price of turbines should go up? That would shake a lot of fence sitters loose. Suppose the threatened steel strike proved to be a bad one? Suppose the electrical workers tied up power plant equipment production as significantly as they did in 1946? Suppose a lot of systems crowded in for new plants and machines for delivery at about the same time—as has been so true during recent years? From an easing situation, turbine deliveries could lengthen, engineering services could become harder to get promptly. One consultant observed that "everybody" who has a winter peak wants his new machine "delivered on Labor Day." But there can be only 10 to 12 big machines turned out each month by all major manufacturers. "Somebody," he says, "is going to have to take his machine on Valentine's Day." The consultants have an idea that utilities, themselves, will be careful to allow some margin. The operating pinch has been so tight for so many for so long that the guess is utility men won't be anxious to risk any more such conditions.

Optimistic for 1952

Around New York at least, the major design and construction groups—and some financial people—seem to be betting that the power business will go ahead with 1952 plant expansion on a promising scale. They haven't been reducing their forces much, although they haven't been hiring much, either. One cites a backlog which is "good for a couple of years ahead." A service company points out that "we bought three plant sites in the last six months." The feeling is that the inrush of new power plant business has peaked, but that it now stands at a stable, high level.

No cut-backs made

Through 1949, one of the questions which has been asked repeatedly is whether utilities will cut back their $9,000,000,000, five-year expansion program. The answer to that question by now should be pretty clear. They haven't. On most of it, they couldn't if they wanted to.

There has been some slowing down in the rate of installation. As the predicted rate of load growth slowed down this year, some companies have stopped paying time and one-half and double-time for 'round-the-clock and weekend work aimed at saving every possible day. One large company now plans to spend 7.5 percent less in 1950 than it had expected to. It has cancelled no orders and it has not delayed any new equipment. It has not put one 1953 job into production which it would have in the works now, except for the load faltering. But, as of now, it can see no difference whether another machine operates in November, 1951, or January, 1952, and it's taking the less expensive way of installing the new capacity. Should its load grow too fast, it can revert to the "nights and Sundays" routine. This company's overall expenditure in 5.5 years will equal what it had planned for five years.

One large consultant, to the contrary, reports considerable pressure to get its jobs done fast. The new equipment will save so much money over the present higher-operating-cost units the utilities want it now.

On this basis, there doesn't seem to be much real prospect that the construction industry will lose any of the power plant work it has scheduled. And the guessing is that it can look forward to a good 1952 in work for the electric power field.

ONE TON WEIGHTS, cast from concrete, were used to sink underwater portions of a 20-in. Ohio pipeline. They were manufactured by the Universal Concrete Pipe Co., Columbus, O. Harold Finnerty was construction superintendent for Mahoney Contracting Co., Mt. Pleasant, Mich., the contractor.

CONSTRUCTION BUSINESS

Rise in lumber prices continuing

Lumber prices continue on the increase this month. Eight out of 20 cities covered by ENGINEERING NEWS-RECORD'S materials-cost survey reported boosts in short-leaf yellow pine items, and six cities increases on Douglas fir. Pine lumber dropped in two of the cities, however, and Douglas fir in five others, making the overall picture one of confusion in the lumber market.

Increases range from $2 to $10 per m b. ft., but in the main are between $3 and $7 per M. Yellow pine hikes are largely in the upper brackets, with Douglas fir increases more cautious. New York's pine prices are up the most at $10, while fir lumber took its biggest jump, $6 to $8 in Cleveland. Both of those cities, and Chicago, Detroit and Los Angeles saw lumber increases last month, while Boston rates this month are up for the first time since the lumber-slide began 14 months ago. Baltimore and Philadelphia boosts are scattered, with the accent on a general lowering of prices.

Main reason for higher southern pine prices seems to be unusually heavy rains in southern timberlands, which hamper lumbering operations. Homebuilding at an unprecedented rate during the past four months, transportation bottlenecks causing local shortages, and freight rate increases also have had an upward influence.

By individual cities, the ENR roundup shows the following changes:

Boston fir lumber is uniformly $3 to $5 higher, with 2x4's now up to between $93 and $95 from the former $90. Short-leaf yellow pine is up $10 per M in the Boston area.

Yellow pine rose between $5 and $10 in New York City, while fir items, 2x4 through 2x8, increased only $2.50. New price in New York for pine 2x4's is $80/$90, up $5; Douglas fir 2x4's are $90/$97.50, up from last month's $87.50/$95. Large sizes, rough finished, are unchanged for both fir and pine.

Short-leaf yellow pine increased $2 per M in Cleveland, and Douglas fir 2x4's from $72 to a $78/$80 range.

Chicago reports that "lumber prices generally showed further strength, mostly in yellow pine," during the past 30 days. A freight rate increase of about $1 was passed along to purchasers, with some grades marked up as much as $3 to $4 per M. Yellow pine 2x4's are up from a $70/$72 range to $72/$74, while Douglas fir 2x4's increased only $1 to $83/$84.

Detroit short-leaf yellow pine prices are up between $5 and $7 per M as a result of heavy demand in recent weeks, excepting for 2x4's which increased only $3.50 to $69.50 per M. Douglas fir 1x6's and 1x8's increased $1.50 per M to $82 and $82.50, respectively, while 2x4's and others dropped as much as $3.

In Los Angeles all Douglas fir prices advanced $3 per M, with the exception of rough 6x12's which went contrary to the trend, and dropped $2 per M. The new Los Angeles price for Douglas fir 2x4's is $71 per M.

Baltimore reports that carload prices have dropped locally—but prices in small lots such as truck load have gone up about $10 per M since the first of the month. "Or small lots some of the local yards refuse to quote except for immediate delivery, and they all complain of fluctuating prices." Declines in Baltimore range from $2 per M to $6 on Douglas fir items, with yellow pine decidedly firmer. Pine 2x4's are unchanged at $60 per M, while 1x8's actually increased by $3 during the month.

Pine 2x4's in Philadelphia are reportedly down to a range of $88/$97 from last month's $90/$100, with "changes in the main occasioned by conditions of supply and demand." Rough Douglas fir 6x12's and 12x12's are down from $122 to a new range of $105/$115 per M, while rough pine 2x12's and 12x12's are stepped-up to $180 from last month's $166 per M. Recent freight rate increases have been absorbed on the whole, but may be reflected in the rise of rough pine items.

Construction money rates

Costs of borrowing for construction are between 8 and 10 percent below a year ago for municipalities, industrial and utility corporations, and railroads, according to Standard & Poor's August report on bond yields, while commercial loan rates for the second quarter of 1949 were generally 8½ to 15 percent higher than a year earlier, as reported by the Federal Reserve Board. New York City commercial loan rates, however, went counter to the trend in the last quarter, and declined 3 percent, from 2.42 percent to 2.35 percent.

BOND YIELD—PERCENT

	Aug. 1949	June 1949	Aug. 1948	% chge. in yr.
Municipal	2.20	2.28	2.45	—10
Industrial	2.49	2.57	2.74	— 9
Pub. Util.	2.66	2.73	2.88	— 8
Railroad	2.66	2.76	2.89	— 8
U. S. Treas. (taxable)	2.21	2.37	2.43	— 9

COMMERCIAL LOAN RATES (CITIES)

Quarter	2nd 1949	1st 1949	2nd 1948	% chge. in yr.
11 Southern & Western	3.17	3.12	2.92	+ 8.5
7 Northern & Eastern	2.86	2.68	2.49	+15
New York City	2.35	2.42	2.12	+11

Construction equipment down except tractors

Shipments of excavating and earthmoving equipment in the second quarter of 1949 totalled $120 million, as reported by Facts for Industry issued by the Census Bureau. These are down 5 percent from the 1st quarter and 19 percent below the record volume in the 4th quarter of 1948.

Only tractors and drills moved against the trend. Track laying tractors are up to $55.1 million, 8 percent above the 1st quarter of '49 and 11 percent above the 4th quarter of '48. Heavy duty wheel tractors are up to $4.5 million, 12½ percent above the 1st quarter of '49, 22 percent above the 4th quarter of '48 but 28½ percent below the record 1st quarter of '48.

Exports of excavating and earthmoving equipment (not including power shovels and cranes) climbed 14 percent in the second quarter to $30.3 million. This is 53 percent above the average for '48, 58 percent above '47.

Excavating and Earthmoving Equipment
Shipments, Total (by quarters) Millions of Dollars from Facts for Industry, U. S. Bur. of Census

	1949		1948				1947
	2nd	1st	4th	3rd	2nd	1st	Aver.
Total	$120.1	$126.7	$139.1	$124.2	$129.3	$129.9	$109.3
Power Cranes & Shovels	22.5	31.1	41.2	37.2	42.1	38.1	33.2
Road Constr. & Maint. Machy	25.8	28.4	30.9	29.4	30.6	28.5	24.8
Constr. Mach. for Mount. on Tract	10.3	10.5	11.8	11.2	10.8	11.7	10.2
Tractors, tracklaying	55.1	50.9	49.8	38.4	37.0	42.1	33.6
Tractors, wheel, heavy	4.5	4.0	3.7	5.3	5.4	6.3	4.6
Portable well & blast hole drills	2.0	1.7	1.7	2.7	3.3	3.2	2.8
Export (other than power shovels and cranes)	$30.3	$26.6	$23.8	$18.1	$16.8	$20.5	$19.1

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 66, went to press.)

Offices—Equitable Life Assurance Society, New York, N. Y. plans $50,000,000 "Gateway Center" to include three 20-story office buildings on a 23-acre site at junction of Alleghany and Monongahela Rivers, Pittsburgh, Pa. Starrett Brothers & Eken, New York, N. Y. are negotiating for construction contract on this project.

Veterans Hospital—U. S. Engineers, Pittsburgh, Pa., will open bids Nov. 15 for Veterans Neuropsychiatric Hospital, in Pittsburgh. Estimated cost of the hospital is $12,000,000 to $16,000,000.

Water Pipe Line—Public Utilities Comm., City of San Francisco, Calif., will soon take bids for 34 mi. 79 in. concrete or steel pipe line from Mission and San Jose to Crystal Springs Reservoir, Santa Clara and San Mateo Counties. Estimated cost is $10,000,000.

Clearing Hungry Horse Site—Nello L. Teer Co., Durham, N. C. bid $6,715,000 for clearing part of Hungry Horse Reservoir Site, Hungry Horse Project, for Bureau of Reclamation, Department of Interior, Columbia Falls, Mont.

Schools—Independent School District Board of Education, Dallas, Tex., will hold a bond election Oct. 1 to vote $16,500,000 for schools. Mark Lemmon, Dallas, is architect.

Housing—Housing Authority of Baltimore, Md., plans housing units in McTavish, Pine Heights, Benson and John Aves to cost $3,825,000; 300 units at Belaire Rd. $2,550,000; and 750 units on 90-acre plot $6,375,000.

Soy Bean Extraction Plant—A. E. Staley Manufacturing Co., Decatur, Ill., awarded contract for soy bean extraction plant and preparatory buildings to H. K. Ferguson Co., Cleveland, O. Estimated cost is $2,500,000. Blaw-Knox Construction Co., (Chemical Div.) Pittsburgh, Pa., is engineer.

Housing—Arthur G. Woods, Windsor, Conn., will construct 275 single frame houses by own forces, $3,300,000.

Gas Pipeline—Arkansas-Louisiana Gas Co., Shreveport, La., is taking bids for the construction on 91-mi., 20-in. welded joint natural gas pipe line between Magnolia area and Perio, Ark., to cost $3,500,000 and 72 mi. of 20-in. pipe line between Marshall, Tex., and Columbus County, Ark., at about $2,700,000.

Airport—City of Fort Worth, Tex., will open bids Oct. 20 for paving runways at Greater Fort Worth International Airport, to cost about $2,000,000. Wyatt C. Hedrick, Fort Worth, is consulting engineer.

Dormitories—State of Connecticut, Hartford, awarded contract for seven dormitories at the University of Connecticut to Frouge Construction Co., Bridgeport, at $2,387,000. Frederic Teich, Hartford, is architect on the dormitory project.

Bridge—Pennsylvania State Highway Department, Harrisburg, awarded contract for bridge and divided highway in Williamsport City, Lycoming County to George Vang Inc., Pittsburgh, at $2,464,455; also for divided highway at Bethel, Berks County, to C. W. Good, Inc., Lancaster, Pa., $1,774,159.

Housing—New York City Housing Authority, received low bid for Melrose Houses, Bronx Borough, from John A. Johnson & Sons, Brooklyn, N. Y., at $2,772,000.

University Buildings—John Carroll University, University Heights, O., plans group of college buildings at about $6,000,000.

Library—John W. Cowper Co., Inc., Buffalo, N. Y., was low bidder for constructing Agricultural Library and Classroom Building at New York State College of Agriculture, Cornell University, Ithaca, N. Y., at $2,536,365. The Department of Public Works, Albany, N. Y., opened the bids for the project.

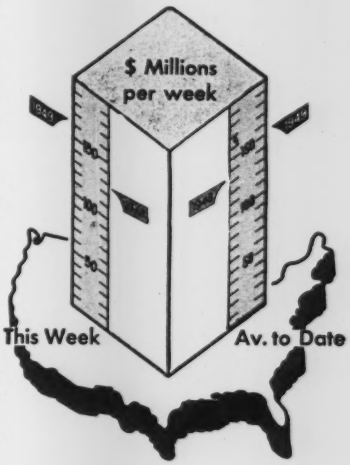
Apartment—Meyer J. Hatowski, Morris Greenburg and Joseph R. Shapiro, Chicago, plan 14-story apartment, in Chicago, to cost $5,600,000. Dubin & Dubin, Chicago, are architects.

Hospital—Turner Construction Co., New York, N. Y., will build hospital addition for St. Francis Hospital, Poughkeepsie, N. Y., to cost about $1,870,000. Tuck & Eipel, New York, N. Y., are architects.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Sept. '49	479.78	230.68
Building Cost	Sept. '49	351.92	190.24
Volume	Aug. '49	352	152



Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of Sept. 29 1949	Cumulative 1949 (39 wks.)	Cumulative 1948 (40 wks.)	% chge av.wk.
Federal	$6.3	$825.6	$757.4	+12
State & Mun.	63.4	2,436.6	1,999.4	+25
Total Public	$69.7	$3,262.2	$2,756.8	+21
Total Private	94.2	2,908.9	2,519.5	+18
U. S. Total	$163.9	$6,171.1	$5,276.3	+20

Contracts by type of work

	This Week	Cumulative 1949 (39 wks.)	Cumulative 1948 (40 wks.)	% chge av.wk.
Waterworks	$ .8	$160.6	$161.4	+2
Sewerage	3.5	198.4	169.2	+20
Bridges	8.6	256.3	224.1	+17
Highways	24.2	723.5	800.5	−7
Earthwork, Waterways	3.1	430.4	402.5	+10
Buildings, Public	26.2	1,247.7	826.1	+55
Industrial	16.5	792.0	738.1	+10
Commercial	72.1	1,787.2	1,447.6	+27
Unclassified	8.8	574.9	506.8	+16

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (39 wks.)	Cumulative 1948 (40 wks.)	% chge av.wk.
NON FEDERAL	$4,359.2	$3,521.3	+27
Corporate Securities	1,812.7	1,600.4	+16
State and Municipal	2,161.5	1,428.6	+55
U. N. Building Loan	...	65.0	...
Federal-Aid Highway	385.0	427.2	−8
Federal	621.8	1,558.9	−59
Total Capital	$4,981.0	$5,080.2	+1

PLANT MAINTENANCE COSTS went down and labor's morale and efficiency went up when Humble Oil & Refining Co. concentrated all maintenance facilities for their Baytown, Tex., works in this new windowless, air-conditioned repair shop.

Air Conditioned Central Repair Shop Cuts Refinery Maintenance Costs

R. Glenn Chapman
Project Engineer H. K. Ferguson Co.
Houston, Texas

TRUE ECONOMY in building must combine efficient design and construction with a cost reducing function for the structure itself. In this respect, Humble Oil & Refining Co.'s new air-conditioned central maintenance shop at its Baytown (Tex.) refinery is truly economical.

The 96,000-sq. ft. shop brings together all service crafts and facilities —formerly widely scattered—to reduce plant maintenance costs drastically. And its design incorporates such money-saving features as: a central, narrow, rigid-frame bay that takes all lateral loads; continuous column footings in trenches easily excavated by heavy equipment; zoned heating and air conditioning to simplify ductwork.

Like most refineries, Humble's giant Baytown plant had been serviced and maintained from separate one-craft shops. Whenever a repair job required more than a single craft —the rule rather than the exception —it was necessary to haul the unit to various shops or else gather the different crafts in to service it. The refinery grew so large and its operations so complex that this system was no longer adequate. A large percentage of all company personnel was in maintenance work and a great part of operating cost was in maintenance.

By centralizing all maintenance facilities in one large shop: several crafts can use common equipment and tools; a single bridge crane can serve different departments; over-all supervision is simpler and more efficient; intercommunication is easier; and duplication of labor and transportation is eliminated.

The new central shop is in the center of a heavy operating area, but adequate space is available for future expansion in any direction. The structure is roughly 300 ft. square, gives some 96,000 sq. ft. of shop floor space, and is 45½ ft. from finish floor to top of purlins. A clear height of 37½ ft. between floor and bottom chord of trusses allows for jib cranes over all machines and bridge cranes serving all parts of the shop.

The building is designed for a total wind pressure of 40 lb. per sq. ft. on the windward side and 20 lb. per sq. ft. on the leeward, each taken independently. It is also designed to withstand internal loading caused by a 100-mph. hurricane when all windward doors are open.

Probably the most unusual and economical single feature of the shop is a central 20-ft.-wide utility bay in the form of a four-story rigid frame. All lateral loads from wind and cranes are transmitted to this frame through continuous roof trusses that span two

flanking 72-ft. open bays on each side.

Shop services, offices and utilities are concentrated in the four-level central bay for economy in operation and easy accessibility. Such services as toilets, tool cribs, oil storage and closets are at ground floor level; offices for foremen and clerks are on the second floor. Most of the utility piping for the entire shop is carried in a third-level pipe gallery, while the top level is given over to air conditioning equipment and unit power substations.

The building is founded on alluvial clay, which was assumed to act as an elastic material. Main columns rest on continuous concrete footings in the shape of inverted tee beams. The continuous footings saved considerable concrete yardage, and they practically eliminated hand excavation for they could be poured in long trenches dug by dragline and fine-graded by bulldozer. Footings under the central bay are tied together laterally to complete the rigid frame of each bent.

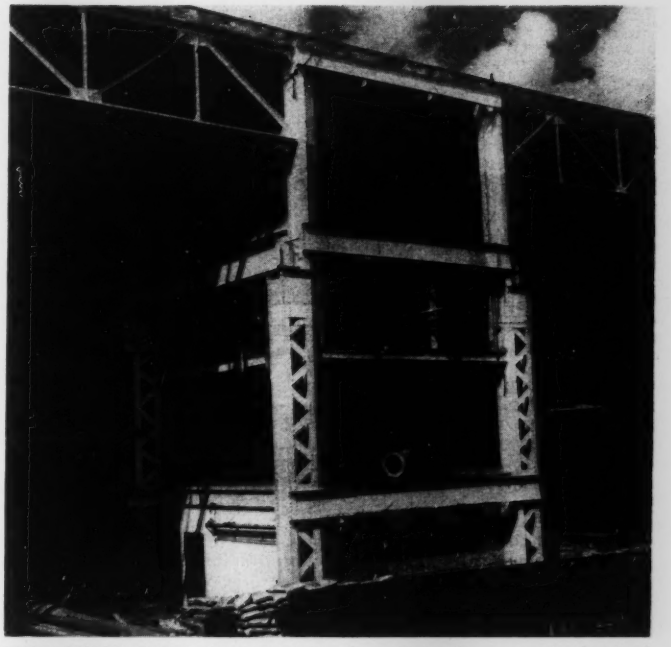
The floor of the shop is concrete over a 12-in. sand fill. It was designed for a maximum pneumatic wheel load of 15,000 lb., and on the assumption that any one portion would receive no more than 10,000 maximum stress applications (once per day for 30 yr.). The floor has no expansion joints except around isolated machine foundations. Thickened and keyed contraction joints, which transfer shear only, block the floor into 24 x 24-ft. panels.

Economical wall construction

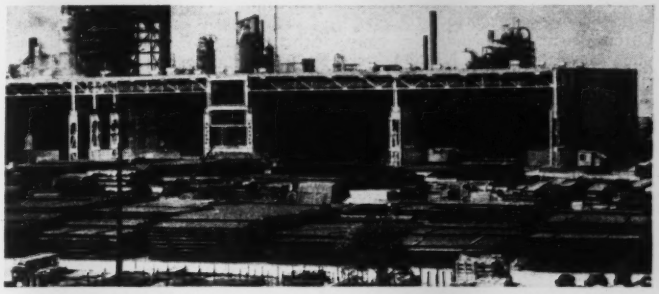
Wall construction combines fireproofness, thermal insulation, high sound absorption and good light-reflective qualities—all in a relatively inexpensive unit. The exterior of the wall is corrugated asbestos battened at the joints and fastened to the girts with welded studs, zinc nuts and lead washers. The interior is covered with prefabricated 2 x 8-ft. panels composed of rigid glass fibre board, a membraneous asphaltic vapor seal, glass wool blanket, and a galvanized expanded metal sheet. The panels are stitched together with Monel wire and stud-welded to the frame.

Insulation and acoustical treatment for the underside of the roof is similar to that for the walls. However, it was not prefabricated, but was applied continuously on pressed steel sub-purlins resting on the main purlins' bottom flanges. The roof is decked with 2 x 8-ft. slabs, of 4-in. precast lightweight concrete, which were first calked, then covered with built-up roofing.

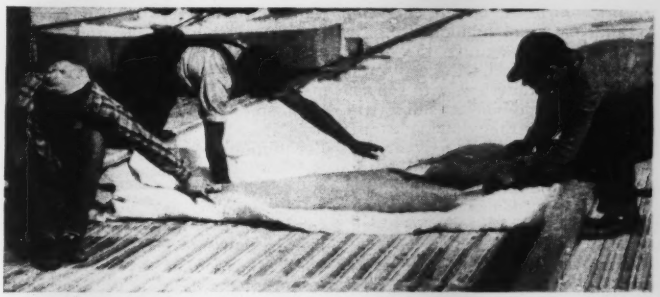
The shop is near operating units



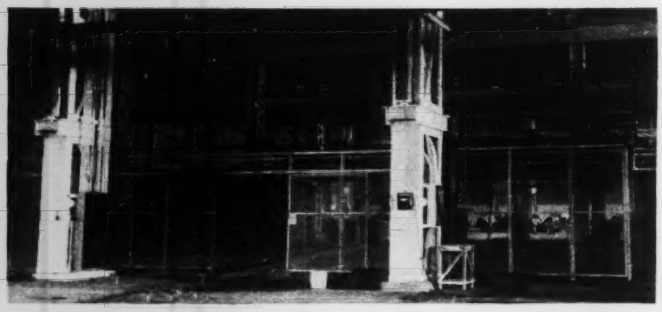
THE CENTER BAY is the heart of the shop. Tool cribs are on the first level; offices on the second; piping on the third; and air conditioning on the fourth.



SHOP BUILDING COSTS were kept down by carrying all lateral loads to the 20-ft. center bay through continuous roof trusses over each pair of flanking 72-ft. bays.



ROOF INSULATION and sound-proofing of glass wool is laid over sheets of expanded metal, galvanized after fabrication, that rest on pressed steel sub-purlins.



PARTITIONS of expanded metal mesh simplify distribution of air conditioning.

that exhaust large amounts of flue gases containing sulphur dioxide. To combat this corrosive condition, all exterior steel doors and frames are heavily hot-dip galvanized.

The entire shop is air conditioned to increase labor efficiency. To simplify distribution of conditioned air, solid partitioning in the building was kept to a minimum. Industrial metal partitions are used where necessary (as around paint shops) but most are of heavy expanded metal mesh. Offices are blocked off with sound-proof double-glazed metal units.

Air conditioning systems

The heating and air conditioning is from eight independently controlled mechanical supply duct systems. They discharge air through ceiling type outlets 40 ft. above the floor in the main shop area, and through side wall grilles in offices and other covered spaces. The several independent systems hold distribution ductwork to a minimum and give separate control for eight different zones within the building.

The air conditioning systems operate on the reheat principle. Each zone is regulated independently by a thermostat and humidity controller. These operate in parallel through a relay or cumulator to control temperature and maximum humidity.

The plenums housing the fans, coils and filters are on the top level of the central utility bay, with supply ducts of 3S aluminum extending laterally out over the working areas. Return air grilles are directly in the fan plenum so there are no return ducts. In addition, each system has an individual outside air inlet through the roof immediately above, which eliminates long fresh air ducts.

Steam, chilled water and drain headers run in the third-floor pipe gallery directly below fan level. Service piping to the coils simply stubs up through the fan floor at each location, and coil control valves are located below the floor so they can be inspected and adjusted from the gallery.

The air conditioning systems are designed to operate on 25 percent outside air makeup. However, outside air inlets are sized to handle 100 percent of the total air circulated through the ductwork. Motor-driven roof supply ventilators are also provided. By closing the return air dampers and operating the roof ventilators, sufficient air can be introduced to limit the temperature rise within the building to 8 deg. F. at maximum summer conditions without using the cooling coils. Thus, the building can continue in use should the chilled water supply to the air conditioning equipment be interrupted.

Air exhaust system

As the building contains machine shops, paint shops, heat-treating furnaces and other producers of dust, contamination and heat, it has exhaust systems to pick up these nuisance loads at their source and discharge them outside. Exhaust fans are in the top floor of the utility bay. The ducts, which are round and which operate at relatively high velocity, are suspended in the truss space, with vertical risers carried up the sides of the columns from the exhaust hoods.

Compressed air, oxygen and propane are piped throughout the shop. For future additional connections, tees have been inserted in the lines at each column.

The building is windowless, but combination mercury-incandescent lighting units provide 35 foot candles of illumination at eye level. They insure properly balanced brightness over the entire working area.

Power wiring to individual machines runs in underfloor conduits served from air circuit breaker power cabinets throughout the shop. The cabinets are fed 3-ph. 440-v. current from 2,400/480-v. dry-type unit substations in the utility bay. Metal-clad 2,400-v. primary switch gear for the substations is housed in a separate room, and the main transformers are just outside the building.

The location of various crafts was carefully planned to minimize material handling between individual shops and to eliminate interference between departments. For example, the forge shop is far from the instrument shops to reduce vibration.

Shop cranes simplify handling

All machinery in the shop is within reach of jib cranes, which are on the main columns. Most of the cranes have 30-ft. jibs with electric hoists. Each of the four 72-ft. clear bays carries one 15-ton and one 30-ton bridge crane. These are selectively controlled from the crane cab or from a pendant push-button station near the floor at the center of the bay. Both jib hoists and bridge cranes have micro-adjustment jogging switches to center work accurately in the machines.

Interior painting follows the principles of color conditioning and safety color coding. Walls and exposed framing start at the floor with eye-ease green that lightens successively upward to pure white above the bottom chords of the trusses. Equipment is painted schematically; bodies are dark green; moving parts buff; inside of gear guards orange; electrical controls blue. Safety colors are brilliant. Fire-fighting units are red, first-aid and safety equipment is backgrounded with green and white stripes, and stumbling or strike-against hazards are colored bright yellow.

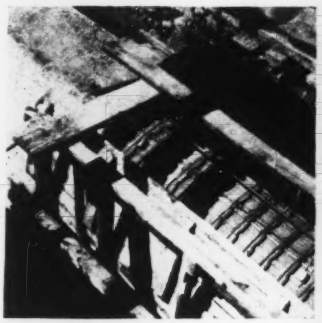
Net results of an installation of this type are: (1) Greatly increased production from the regular maintenance crew due to centralization of activities and because of pleasant and comfortable working conditions; and (2) lowered overhead cost through elimination of duplicate tools, machines and handling equipment. While the first cost of centralization may seem high, the change—if properly done—will rapidly repay the original outlay and will continue to pay dividends in the future.

Design of the central shop project was carried out for Humble Oil & Refining Co. by its engineering division at Baytown. The H. K. Ferguson Co. was general contractor and performed all detailed engineering.

CUTTING tiles to be used for sewer lining was a first step in building new sewer lines for the City of Honolulu, Hawaii.

PASTING—really "buttering" the edges of the tiles with a rubber compound—was accomplished by a converted sausage-grinder.

FITTING of the buttered tiles was done after a form had been placed on cradles already poured to support the pipe.



CONCRETING followed the placing of the tiles. But first, forms and reinforcing were installed around the liner.

COMPLETION photo shows a smooth, carefully-assembled interior, with all tiles held tightly by the jointing compound.

REPAIR of older sections included removal of old liner, cleaning of concrete, and replacement with new tile.

Honolulu Builds Sewer Inside Out

George C. Wallace
Engineer, Division of Sewers, Honolulu, T. H.

NOW RAPIDLY EXTENDING its sewer lines to serve new population areas and at the same time repairing seriously deteriorated older sections, the City of Honolulu, Hawaii, has developed an unusual "inside-out" construction.

The new sewer work now under way will connect an area near Diamond Head, facing Honolulu Harbor, through the center portion of the city to an outfall on the waterfront.

On this new line, engineers determined on a method whereby tile liner plates were placed first, then concrete poured around them. They found that this system brought a bid price nearly $25,000 less than the more conventional method of putting in precast tile lined pipes.

Briefly, the pipes were built in this manner:

Excavation was made and concrete cradles were poured in place.

Then a circular form was set to serve as a support for the tile liner plates. The liner plates were placed on this form, after the tile edges were first buttered with a synthetic rubber compound in a heavy putty consistency and easily worked with either a spatula or a pressure filling gun.

Once the plates were thus set, they were held in place with a metal clip, while reinforcing steel was placed and tied, and wood forms for the pipe itself placed.

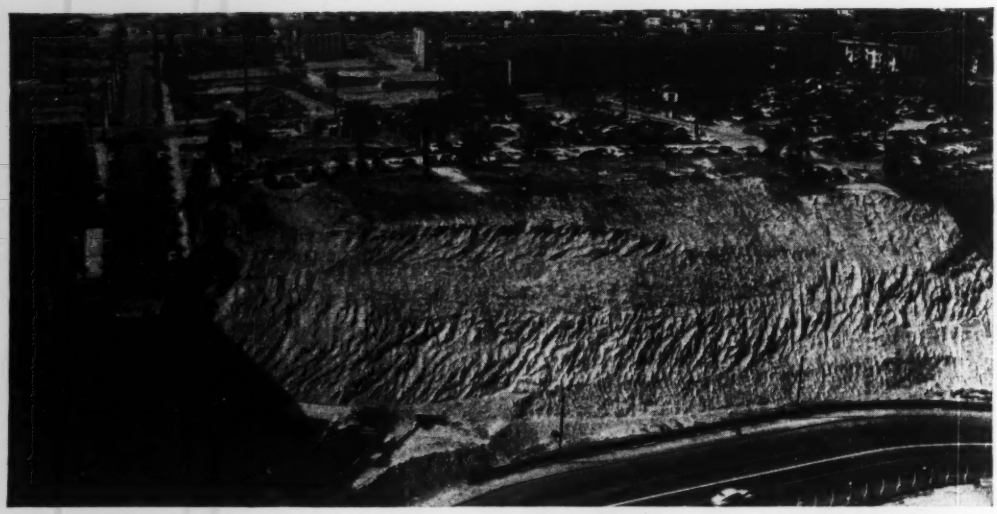
Concrete was then poured and vibrated, and after 24 hours the inner form was collapsed and moved along.

In a comparison of cost, it was found that the low bid for the 42-in. tile-lined cast-in-place pipe, 1966 lin. ft. long, including excavation, totaled $97,144.

The low bid submitted for precast tile-lined pipe was $122,899.

In the rehabilitation of older sewers, original tile linings had been set in cement mortar. Recent inspection showed that the mortar joints had disintegrated, permitting the concrete behind the plates to be attacked by gas. About half of the plates had dropped off.

Existing sewers were refinished from the inside, using the synthetic rubber sealing compound instead of mortar.



THIS HISTORIC SPOT, defended in 1847 by a 100-man garrison under Lt. Col. John Freemont, will soon be but a memory, as . . .

A Hill Is Leveled and a Tunnel Razed in Downtown L. A.

FORT MOORE HILL in downtown Los Angeles is giving way to make room for the Hollywood Freeway. The Broadway street tunnel, running under the hill, also must go.

Leveling the historic old hill should be a simple earthmoving job. Removing the 765-ft. tunnel should be a simple demolition job. But both are complicated by the fact that earthmoving and demolition must be accomplished without endangering or further entangling the heavy traffic of one of the country's worst traffic areas (Los Angeles boasts one car to each 2¼ persons).

As a solution to the earthmoving problem, Guy F. Atkinson Co., of San Francisco, has put a 6-yd. electric shovel and 11 semi-trailer trucks to work under floodlights, moving up to 6,074 cu. yd. of hill per night-shift while the city's autoists sleep. In one night-shift (from 7 p.m. to 6 a.m.), 379 loads were hauled away.

During the day a bull dozer scrapes away at the 900,000-cu. yd. hill, preparing the night's haul. The disposal area is about a mile away, and up to now over 50,000 miles have been run up by the big earthmovers without a major mishap. The semi-trailers can carry a 20-yd. load, but they have been taking just three dipper-fulls, or 18 yds. on each haul.

Tricky demolition

The demolition problem was this: While the tunnel's masonry interior could be safely collapsed with explosives, the mass concrete headwalls at tunnel portals tower above busy streets

SAFER THAN BLASTING, this 10-piston jack breaks tunnel headwalls when . . .

. . . SET INTO HOLES drilled in the concrete. The compact, 3½-in. unit is "pumped" into action with a separate hand pump. It exerts a 150-ton thrust, and . . .

and face multi-story municipal buildings. Blasting was impractical from the safety angle.

As a solution to this set of circumstances, the contractor is using a rock jack (Duncan Hydraulic Roc-Jak) to break up the 2- to 5-ft. thick headwalls.

The poorly bonded mass concrete and boulders at the portals are easy prey to the rock jacks, which are breaking up the structures piece by piece. Bulldozer and crane haul out most loosened chunks; some are let fall to roped-off areas on the street 54 ft. below—the street will be rebuilt when the Hollywood freeway goes through.

Essentially the rock jack consists of ten pistons contained in a single 24-in. long steel casing with a 3 in. diameter. These $1\frac{3}{8}$ in. diameter, hardened, alloy steel pistons, fitted with neoprene cups and tested to withstand 15,000 psi., can each develop a 15-ton thrust normal to the axis of the casing. Thus, when the 3-in. diameter casing is inserted in a $3\frac{1}{4}$ in. hole drilled in the concrete, a resultant 150-ton thrust is achieved.

Jackhammers are used to drill the $3\frac{1}{4}$ in. diameter holes. The rock jack is inserted in the hole with pistons retracted, then a 30 in. steel equalizing shim or feather is placed along the faces of the pistons to distribute their thrust over the entire 2 ft. depth of the hole. After the "slack" in the hole has been taken up, an additional piston travel of only $\frac{1}{8}$ in. is necessary to cause the fracture. The average break has been about 4 tons, with some chunks up to 7 tons.

The entire jack unit weighs but 90 lb. Nothing heavier than 10 weight oil is used in the hand pump shown in the accompanying photograph. In placing the jacks for breaking, the piston side is inserted at right angles to the desired break. Holes are drilled along the head wall at about 4 ft. centers.

Once the crack has been defined, a wedge anchor is inserted with a ring at its top. Then a line from either bulldozer or crane lifts the chunk clear of the wall and sets it safely aside. A two man crew using two rock jacks can break about 50 cu. yd. of concrete per 8-hour shift.

Double-roofed tunnel

While the tunnel itself offers no difficult demolition problem, it is rather an unusual structure. Originally opened to traffic in 1901, it cut through the hill on a 6 percent grade downward toward Sunset Boulevard. In 1915 the roadway grade was cut to 3.8 percent, walls were tiled and a second brick arch roof was built considerably below the original roof. The resulting structure has a void below the old six-course brick masonry roof and above the new two-course brick arch. This dead space is accessible from the new tunnel and also through a manhole from ground level.

Working in this dead space between the old and new arches, the contractor is preparing single-stick dynamite charges in the old roof; larger charges are to be fired along the old concrete walls of the double tunnel. It is expected that when the old roof drops it will take the lower roof with it. Delayed shooting will be timed to drop the original arch first, then demolish the walls.

The historic old Fort site is the last real obstacle in the way of Los Angeles Hollywood Freeway construction. Just four blocks west of the hill a four-level traffic interchange nears completion where Hollywood Freeway will cross Harbor, Arroyo Seco and Santa Ana Freeway.

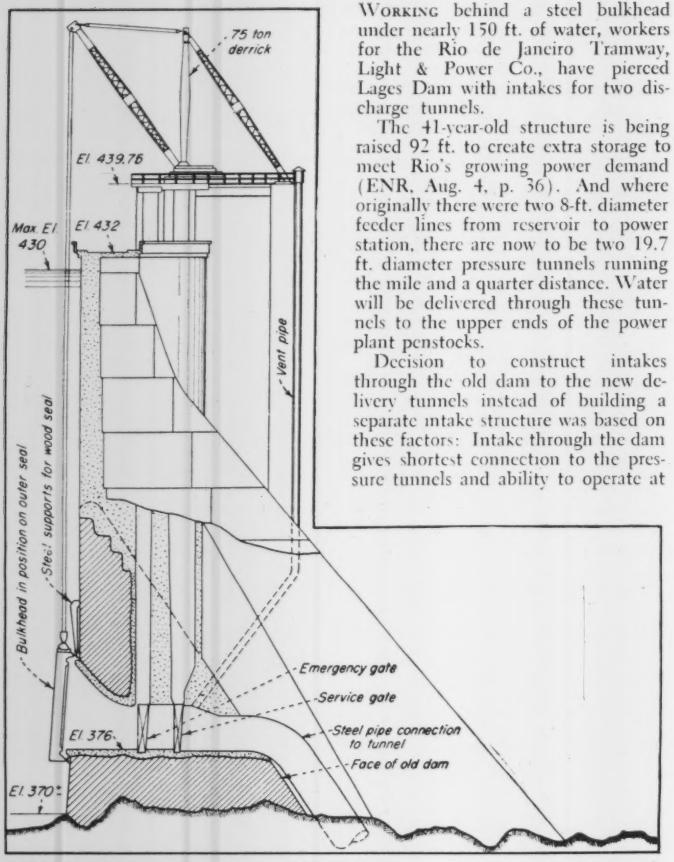
At the Temple Street portal of the tunnel the contractor provided a detour by which heavy traffic can safely bypass the demolition work. When the job is completed, Broadway will pass over the Hollywood freeway on two 60-ft. spans.

County, city and state are sharing the cost of leveling Fort Moore Hill and grading the Hollywood Freeway. California is paying $530,000, Los Angeles County $156,000 and the City of Los Angeles $248,000 of the total $934,000 contract. Engineering has been done by the California Department of Public Works, Division of Highways. C. H. Purcell is director of public works, and G. T. McCoy is state highway engineer. The project is under the general supervision of Assistant State Highway Engineer S. V. Cortelyou.

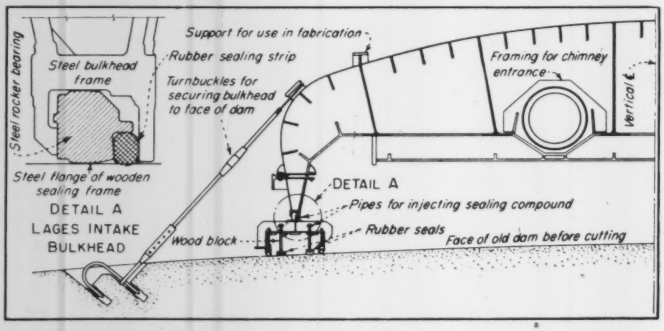
. . . CHUNKS CRACK LOOSE in 4- to 7-ton sizes removed from the wall by crane.

A TRAFFIC PROBLEM will be partly solved when Hollywood Freeway and the intricate four-level interchange at the top are completed. Tunnel portals are indicated.

Discharge Intakes Pierce Dam 150 ft. below



TUNNELING BEHIND A STEEL BULKHEAD, power company engineers pierced the old Lages Dam and installed intake racks and gates.



HALF SECTION OF BULKHEAD shows framing of the structure and method of tying to face of dam. Seat for bulkhead against sealing frame was almost water tight.

WORKING behind a steel bulkhead under nearly 150 ft. of water, workers for the Rio de Janeiro Tramway, Light & Power Co., have pierced Lages Dam with intakes for two discharge tunnels.

The 41-year-old structure is being raised 92 ft. to create extra storage to meet Rio's growing power demand (ENR, Aug. 4, p. 36). And where originally there were two 8-ft. diameter feeder lines from reservoir to power station, there are now to be two 19.7 ft. diameter pressure tunnels running the mile and a quarter distance. Water will be delivered through these tunnels to the upper ends of the power plant penstocks.

Decision to construct intakes through the old dam to the new delivery tunnels instead of building a separate intake structure was based on these factors: Intake through the dam gives shortest connection to the pressure tunnels and ability to operate at lower reservoir levels, thus providing a maximum useful storage; such an intake affords least chance for contamination (the reservoir forms part of the water supply for the city of Rio de Janeiro); and simpler methods for building the gate tower and maintaining the gates.

As detailed previously, it was necessary to maintain maximum storage throughout the entire operation. Therefore, construction of the two new intakes on the reservoir side of the dam had to be accomplished under water. Divers were employed, and a steel bulkhead to withstand a 3,500-ton pressure was custom-made.

Fitting the seating frame

As the first step, a rectangular wood seal was fitted tightly against the concrete upstream face of the dam. Against this sealing was to go the steel bulkhead, held in position by twelve turnbuckles—six on each side—which had previously been anchored into the concrete of the dam.

The wood seal had to fit exactly against the face of the dam. To determine the profile of the concrete face around the inner and outer perimeters of the seating frame (a three-sided steel box in which wood sealing blocks were confined) the rectangular steel frame, without the wooden blocks, was first lowered into position. It was held at a fixed distance (about $5\frac{3}{4}$ in.) away from the concrete face by means of adjusting screws fitted to the outside of the frame. After it was secured in this position, divers scored two parallel lines, one inch apart, on the bases of both side plates of the steel box around the entire perimeter of the shield frame. This was done by a specially constructed traveling steel scribe, with small wheels on one end, which traveled over the dam surface.

These two lines were just $5\frac{7}{8}$ in. and $6\frac{7}{8}$ in. from the closest point on the concrete face and were, of course, parallel to each other and to the concrete face, showing the same minor irregularities that occurred thereon. The frame was then lifted out of the water and the side plates of the box were cut along the line that had been marked $5\frac{7}{8}$ in. from the concrete. This left as a reference line the one that had been marked $6\frac{7}{8}$ in. from the same face. Thus, the downstream edges of the box were made parallel to the concrete base when the sealing frame was in position.

Hardwood blocks 5 in. thick were placed in the steel box frame and

bolted in position, each block marked for its particular location in the frame. The downstream faces of these blocks were cut to conform to the contour of the concrete face as determined by the markings on the sides of the steel box. The hardwood blocks were recessed on their downstream corners to provide space for rubber seals. Also, they were drilled for pipes through which sealing compound could be injected to the bearing face of the block, if necessary after the seat was finally in position.

Checked for fit

Holes were drilled near the sides of the blocks for follower bolts that would compress the rubber corner seals against the face of the concrete. The entire frame was then lowered to its ultimate position where the fit of the wooden sealing blocks against the concrete was checked and corner and special blocks were adjusted where necessary. The frame was then removed from the water.

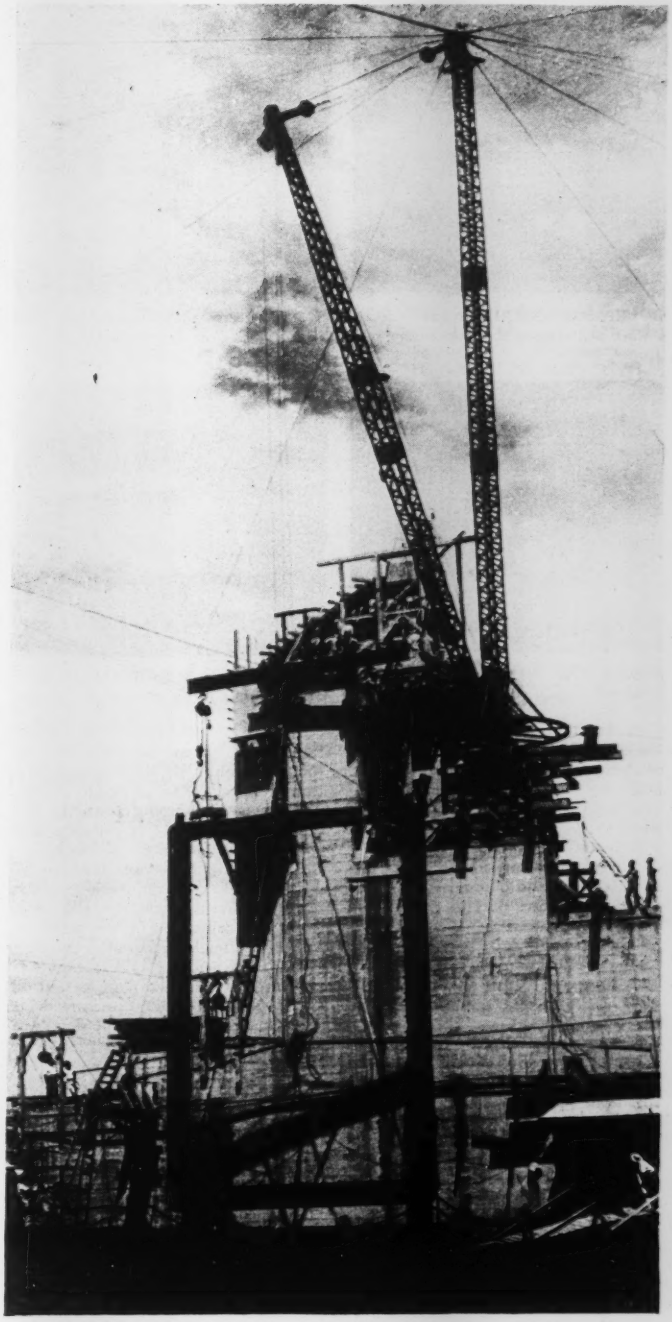
When all other preparations had been made for placing the bulkhead on the first intake to be cut, the hardwood blocks were coated on contacting sides with a special sealing compound of grease, cement and sand and replaced in the frame. The injection pipes, follower bolts and rubber seals were inserted. The frame was then lowered into its final position against the concrete face of the dam and suspended from the two steel supports which had been prepared for it. The sealing frame was now ready to receive the bulkhead.

Bulkhead design

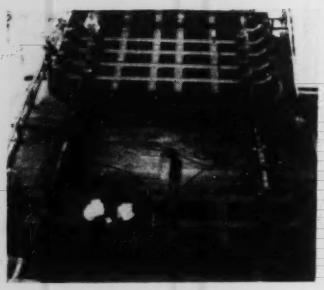
The bulkhead itself was designed not only to act as a caisson during construction of the intakes, but also to serve as a closure for the intake openings to permit future inspection, maintenance or repairs on the racks and gates. It was built therefore with outer and inner sealing edges; the inner sealing edge could in the future be seated on a permanent steel sealing face set into the concrete just outside the racks.

Design of the bulkhead had to take into account limitations of the stiff-leg derrick by which it was handled from above. In fabrication of the caisson, all welds were tested magnetically as completed.

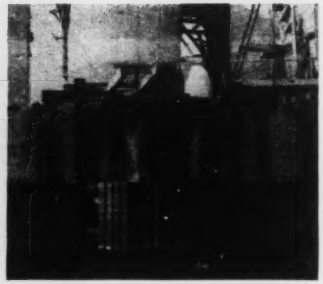
Over-all dimensions of the completed bulkhead were 26 ft. x 46 ft. by 7.8 ft. Total weight was 82 tons. Two circular openings were located in the



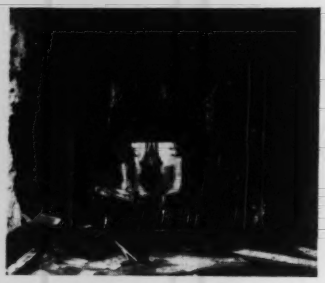
SEATING FRAME IS LOWERED into its ultimate position on the dam's face for a check on its fit, which had to be exact if water tightness were to be achieved.



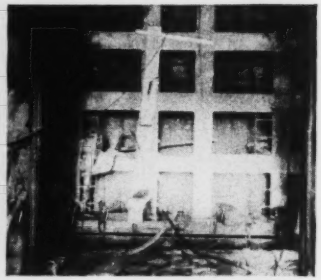
BULKHEAD ASSEMBLY was done on a work platform on the downstream side.



ACCESS CHIMNEYS entered the bulkhead from above.



INSIDE THE DAM a valve was rigged to handle seepage. It wasn't needed.



BEHIND THE BULKHEAD this space was dry while intake gates were installed.

top of the bulkhead for the connection of steel cylinder access chimneys, 2½ ft. in diameter. Both bulkhead and chimneys were painted inside and out with three coats of red lead.

A special platform for the assembly of the bulkhead was constructed within easy reach of the derrick on the downstream face of the dam at an elevation slightly below the crest. The bulkhead was fabricated and assembled partly in the company's Rio de Janeiro shops and partly on the job. In spite of all obstacles presented by wartime work conditions, the bulkhead was completed and ready to be placed in position in December, 1943, and it was seated in place over the East Intake in January, 1944.

Intakes are described

Starting at the upstream face of the dam, each of the two new intakes consists of a trash rack (at the face of the dam), a transition tunnel section from the inlet to the steel-lined gate chambers, the gate chambers, and another transition section from the gate chambers to the 13.1 ft. dia. steel pipe connecting to the pressure tunnel.

While the bulkhead was being fabricated and the subaqueous preparations made on the upstream side of the dam, the work of chipping out a tunnel through the concrete of the old dam and chipping away the old concrete for the base of the gate towers was being carried out on the downstream side. This work had to be done carefully to avoid damage to the old structure, and progress was slow.

On the centerline of the proposed intake a rough horizontal opening about 8.3 ft. wide by 11.5 ft. high was cut through the old dam to within about 6½ ft. of the upstream face. The bottom of this opening was slightly below the finished bottom of the intake. As the opening approached its upstream end, the height was reduced to about 5.9 ft. One hole, normal to the upstream face of the dam was cut in the face of this opening to within 3.9 ft. of the dam's face. This hole was 20 in. above the intake floor and large enough to allow a 12 in. pipe to be concreted in. A 12-in. valve was bolted onto the exposed end of this pipe.

On the upstream side of this valve a 4 in. drain valve and drain pipe was connected to the 12 in. pipe. A special drilling head, bolted onto the downstream side of the 12 in. valve, was arranged so that an 8 in. hole could be cut through the remaining 3.9 ft. of concrete to the upstream face by drilling out a circle of 1½ in. holes. After completing such an 8 in. hole, it was planned to remove the special drill head so that the 12 in. pipe could be extended to discharge the expected leakage past the bulkhead. It was planned that this 12 in. pipe would handle any unwatering of the work space between the face of the dam and the inside of the bulkhead that became necessary.

Actually, however, it was found unnecessary to complete the 8 in. hole. After the first 1½ in. hole was drilled through the upstream face, the 4 in. drain valve was opened and it was found that the bulkhead had seated tightly against the seal frame holding the wooden seal blocks. The divers verified the fit of the bulkhead against this sealing frame and the fit of the wooden seal against the concrete face of the dam. Both were found to be tight all around, and the inside of the bulkhead was unwatered through the one 1½ in. hole. Total leakage around the entire perimeter of the bulkhead and wooden seal was on the order of 1 gal. per sec.—much less than had been anticipated.

Access to the inside of the bulkhead could now be had through the cylindrical steel chimneys, and the inside was carefully inspected. After a thorough check-up on both sides of the bulkhead, work was resumed on cutting out the remainder of the old concrete and placing and concreting the steel liner of the gate chamber.

Permanent intake gates

The permanent gate arrangement consists of one emergency gate 25 ft. from the upstream face of the dam and one service gate 11.7 ft. downstream from the emergency gate. Both are of a self-closing type 16 ft. x 9 ft., designed to open and close under the full pressure of 177 ft. of water. One gate is provided for the service opening in each intake, but only one gate will be provided for the two emergency openings, with provision to move it from one intake to the other as required. The operating platform at the top of the gate tower is 26 ft. above the dam crest. Gates are raised and lowered by single drum, 95-ton hoists. Exposed parts of the gate frames, guides and gates were coated with bitumastic enamel.

Due to the delays in construction of the pressure tunnel, the east intake was not put into operation until 1946, but it was finished and ready to operate in October, 1944. The west intake and Tunnel No. 2 will be completed at some future date.

HIGH IN THE CASCADE MOUNTAINS, east of Seattle, Wash., a mile of track had seven tortuous curves. These curves were either reduced or eliminated in a rerouting project, when the Great Northern Railway judged it . . .

Worth a Million Dollars To Shorten Rail Line 30 ft.

ALTHOUGH a $1,000,000, one-mile track relocation only shortened its line by 30 ft., the Great Northern Railway has been able to increase greatly its operating efficiency because of the project.

The job concerned 5,930 ft. of electrified main line track through the Cascade Mountains, east of Seattle. This section had seven curves with a maximum of 10 deg., and grades of 2.2 percent. The sharpest curve on the new line is only 4 deg., and grade has been reduced to 2.09 percent on the new section. In all, the new work eliminated four curves, reduced one from 6 deg. to 4, and another from 4 to 3.

Because the track section is in a dangerous slide area, and due to the heavy curvature of the old line, all trains were forced to approach the section at reduced speed, both up and down grade. In passenger service, of course, this meant merely loss of time. But with heavy freights the slowdown on the ascending grade always posed the hazard of breaking drawbars on the cars.

The new section now permits full speed, on a straightaway up or down hill, with hazards from rock slides and breaks eliminated. Five minutes is saved per train on the 7.03-mi. run between Berne and Merritt—stations west and east of the relocation.

The relocation includes a 546-ft. steel viaduct and a 675-ft. single track tunnel. The tunnel, on a 2.09 percent grade, has a clear inside width of 18 ft. and a semi-circular top on a 9-ft. radius. Clear height from top of rail to top of arch is 24 ft.

Work involved

Drilling for the tunnel, a full-bore excavation, was done from a rail-mounted jumbo; mucking by an electric shovel. Muck was removed by electrically operated dump cars on a narrow gage track. A concrete mixing plant and a concrete pumping machine were set up outside the east portal, and concrete for the tunnel lining was pumped in to where it was to be placed in steel forms.

The viaduct, on a tangent alignment and 2.09 percent grade, consists of nine deck-girder-and-beam spans, supported on three towers, concrete piers and abutments. Two 96-ft. girder spans extend over Nason Creek and a side-hill gulley.

The bridge stubstructure was completed late in the fall of 1948, but severe winter weather caused cessation of work until April of this year. Steel erection started May 1 and was completed in two months. A cableway on the center line of the bridge, with supports back of each abutment, erected the bridge and was used to handle light bracing, ties and light equipment. A derrick car, with a 65-ft. boom, was used to place all girders and beams.

Electrification

Electrification of the new line was planned so as not to interfere with work of the bridge and track construction crews, or delay the normal electrified operation of the railroad. A regular line maintenance crew performed the new construction while continuing normal maintenance duties.

Before electrification could proceed, track work had to be finished so that the line maintenance tower car could get on the job. The crew set the poles first, then, with completion of the bridge and track work, applied pole masts and insulators and strung messenger and trolley wires. The inclined catenary design of overhead construction was used, with some modifications in span lengths. The outside 24 spans are of mast-arm type on cedar poles, with vacuum-treated creosoted butts and suspended trolley insulators. The spans inside the tunnel are 75 ft. long, with insulators mounted in recesses in the tunnel roof.

The tunnel and the bridge substructure, and grading the line, was carried out by Morrison-Knudsen Co., of Boise, Idaho. The American Bridge Co. fabricated and erected 629 tons of structural steel for the viaduct over Nason Creek Canyon. Railway crews laid the bridge deck, built trainmen's walks on either side of the bridge, and painted the structural steel.

The relocation, under the jurisdiction of H. J. Seyton, chief engineer, and G. V. Guerin, bridge engineer, of St. Paul. H. M. Goehring, assistant chief engineer, and R. W. Gustafson, assistant bridge engineer, both of Seattle, were directly in charge of certain phases of the project. C. F. Intlekofer, Great Northern structural engineer, of St. Paul, was in charge of bridge erection for the railroad.

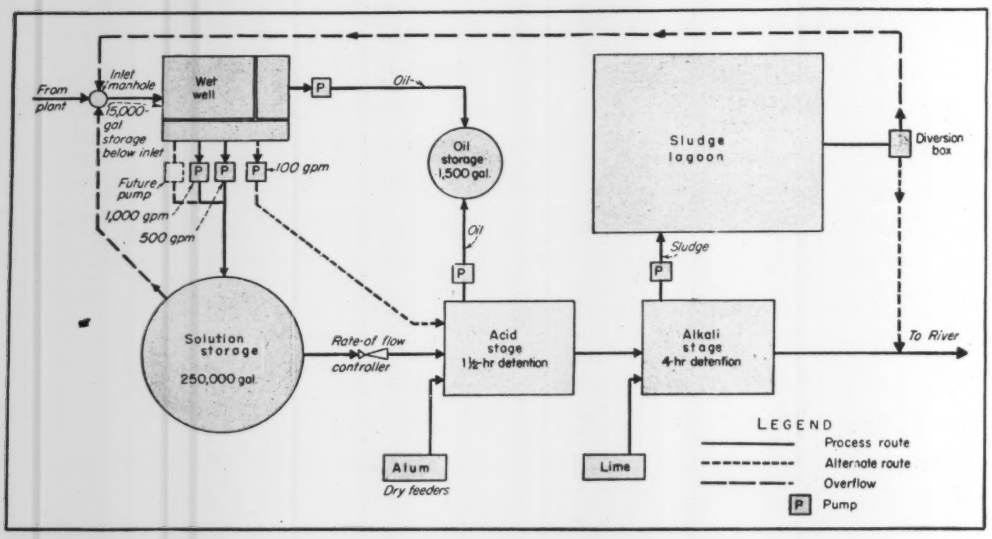


Fig. 1. WASTE-OIL SOLUTIONS are received in a wet well where part of the floating oil is skimmed off. Excess flow is pumped to storage from which 100-gpm. plant inflow is maintained. Effluent passes to the river; sludge is lagooned.

How to Avoid Oil-Waste Pollution

W. B. McMorris
Engineer
Aluminum Company of America
Pittsburgh, Pa.

AN OIL-WASTE TREATMENT PLANT—the most important division of a three-way disposal system is a part of the Aluminum Company of America's sheet-and-plate rolling-mill construction program at Davenport, Iowa.

Because plant effluents are discharged into the Mississippi River four miles upstream from the Davenport water-supply intake, particular care had to be taken to prevent pollution conditions.

Uncontaminated cooling waters are returned through the storm-sewer system to the river. Domestic wastes collected in sanitary sewers are conveyed to a disposal plant for treatment.

Neither of these systems, however, is capable of handling the oily wastes that originate at various points throughout the mill.

Soluble oil solutions—discarded because of partial cracking, souring or other failures—constitute the greatest volume of industrial wastes. Used as hot-mill coolants, these solutions are often discarded with disconcerting suddenness. Batches of waste as large as 100,000 to 150,000 gal. may be expected. These discharges contain from two to ten percent of soluble oils as emulsions.

Filter backwash and other effluents from soluble oil reclamation systems at the hot mills are also discharged into the industrial-waste sewers. These effluents contain as yet undetermined percentages of both free and emulsified oils. Small quantities of free oils and greases that originate principally at the roll-and-bearing cleaning pits are also wasted to the sewers.

Separation of floating oils by gravitation was the starting point in designing the disposal plant. Removal of the emulsified fraction of the wastes was approached by investigating two-stage chemical treatment: acid and alkaline processing. Chemical treatment consists of:

(1) Mixing the wastes with acid or acidic salt to obtain optimum pH for cracking emulsions. Ordinary filter alum was used as the acidifier.

(2) Primary settling;

(3) Adding alkali to raise the pH to the point of alum-floc formation;

(4) secondary settling.

Experiments indicated that this process would not only remove the oils and greases effectively but would be adaptable to either batch or continuous operation.

The treatment plant was therefore designed on the basis of the experimental findings, to operate continuously at an economical low-flow rate (100 gpm.) with provision for temporary storage of peak flows. Batch treatment requires no alteration of plant facilities.

Hot-mill wastes to separate sewers

Oily wastes from the plant are collected in separate sewers that total 2,500 ft. of 12 and 15-in. pipe. This system now serves the hot mill, but it will be extended to the cold mill and finishing departments.

At peak flows, it is estimated that the sewer system will bring 1,000 gpm. of wastes to the treatment plant, with total quantities of up to 200,000 gal. being dumped within a few hours.

Oil-bearing wastes from the industrial sewer move through the inlet and return-flow manhole into the 15,000-gal. wet well (Fig. 1), where a portion of the floating oil and grease may be skimmed off the surface for storage in an above-the-ground 1,500-gal. tank.

Wastes to be conditioned chemically are lifted either to temporary storage by 500 and 1,000-gpm. centrifugal pumps or forced directly to first-stage treatment by a 100-gpm. unit. Control of the pumps is by a float-program switch, supplemented by manual operation.

The 250,000-gal. temporary storage tank (with a capacity of equal to that of all the major sources of coolants) is located well above ground level to obtain gravity flow through the remainder of the plant.

Outflow from the storage tank to the first process stage is governed by a Venturi rate-of-flow controller under normal operating conditions.

Two-step chemical treatment takes place in a two-story tank—actually a "tank-within-a-tank" (Fig. 2). The inner (upper) tank is rubber-lined steel; the outer is concrete.

Alum fed by conventional dry feeders is added to the flow at the influent end of the inner tank. After a short, rapid mix, it overflows into the main body of the inner tank where floating oil is separated during 1½-hr. detention.

De-emulsified floating oil is removed by mechanical flights and slotted-pipe skimmers. After flowing by gravity to a sump, this oil is transferred by pump to the oil-storage tank.

Lime is added

The partially treated waste then flows into a small compartment at the end of the inner tank where it is alkalinized by addition of lime, also fed by conventional feeders. After a short mix, the solution passes downward into the outer tank.

In the outer tank, gravitational separation takes place during four-hour sedimentation. The alum floc settles to the bottom of the tank while clarified solution rises, flows over effluent weirs into the river.

Sludge is concentrated at one end of outer tank by mechanical flights and pumped to a lagoon for settling, consolidation and storage.

Since small quantities of oil may be released from the stored sludge, overflow is returned via a diversion box to the plant-influent manhole. The diversion box also permits the discharge of the stable effluent directly to the river.

Additional lagoons will be built and operated as conditions dictate.

The wet well, pump room, process tanks, and chemical-feed and control rooms were economically incorporated into a single structure (Fig. 2). With exception of the inner-process tank, the structure is reinforced concrete.

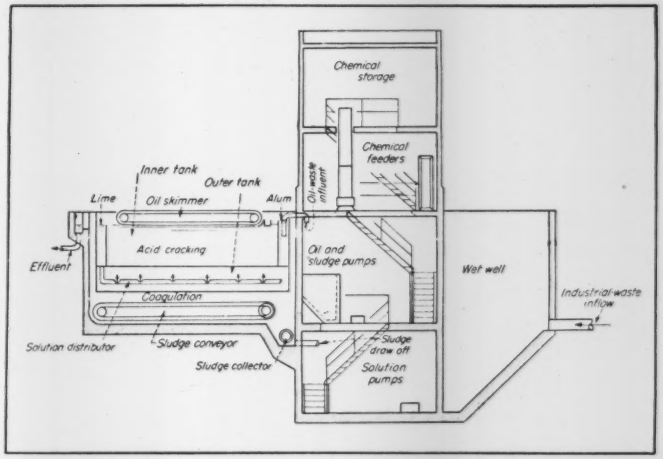


Fig. 2. EMULSIFIED FRACTION of oil wastes is removed by acid cracking and coagulation and settling. The process tank, chemical-feed equipment, pumps and controls are located in a single reinforced concrete structure.

Acid-carrying pipes are red brass; valves are rubber lined. For all other solutions, conventional materials were employed for pipe lines, valves, pumps and auxiliary equipment.

Initial operation and performance

Laboratory and pilot-plant tests indicated that emulsions were effectively cracked in the inner tank with a pH of about 6.0, and that a voluminous flock was formed when a pH of 7.0 was maintained in the second stage.

Treatment of large quantities of waste oil solutions and oils over an extended period has confirmed these findings. Initial dosages of 7 grains per gallon of alum and 10 gpg. of lime produced best results.

As treatment progressed, the dosages were varied to conform to changing solution conditions, with both alum and lime additions ranging at times up to double the initial values.

Upon application of the alum, and with only enough mixing to obtain even distribution of the acid, the material in solution separated in the form of very large masses of floc of curd-like appearance. The rather violent action of the rapid-mix resulted in floc particles of uniform size, apparently of the order of 1 to 2 mm. Neither the curds nor the particles settled well in the acid stage, although small quantities of acid sludge could be withdrawn several times daily.

At no time during the test run was there any oil in evidence on the tank surface, and it was not found necessary to operate the mechanically driven oil skimmer at the surface.

Addition of the lime resulted in the formation of an alkaline sludge which settled well. Even at a flow 50 percent in excess of the design rate, there was only a slightly discernible carry-over of sludge particles into the plant effluent.

Operation of the plant during the trial run did not produce enough sludge, nor was there sufficient storage time, to observe fully the behavior of the lagooned material.

The quality of the plant effluent at the design rate was such that there was no evidence of pollution being added to the river. The effluent was slightly turbid, showing only a faint haziness in transmitted light. There were no indications of floating oil, or of oily films. Color was completely absent.

Disposal of reclaimed oil

Ultimate disposal of reclaimed oil is a problem that will require solution after a reasonable quantity has been accumulated. It undoubtedly will burn; such disposal might find application on supplying heat to accelerate the cracking process.

Overall plant design was by Alcoa's general engineering department under the direction of J. W. Schreiber. Some use was made of pilot-plant operation data for a similar process that was developed by the Chevrolet Division of General Motors Corp., Detroit, Mich.

Equipment for the oil-waste treatment plant was developed and supplied by the Walker Process Equipment, Inc., Aurora, Ill.

The Problem is to keep this big drafting room filled with able workers, bringing up suitable replacements as needed. This company has turned to specializing aptitude tests to find men with potential ability, for training.

Test Fits Worker to Right Job

Joseph Gambatese
McGraw-Hill Washington Bureau

ONE means for cutting costs—through selection of the proper man for the proper job—is now undergoing successful test by the Dravo Corp. at its Pittsburgh, Pa., drafting room.

The testing program is based on the experience of the U. S. Employment Service in testing job aptitudes of thousands of employees.

The program had its inception six months ago, when executives of the company faced the problem of hiring and training draftsmen. The company employs 76 draftsmen in its Pittsburgh offices. In providing replacements, officials found that too many men hired for training failed to make the grade. In fact, their figures showed that only 13 out of 30 lasted the three to four years it takes to make a finished draftsman of an inexperienced worker. And the normal training period cost Dravo $2,200 for each draftsman, not including the cost of textbooks and supplies.

This office pulled out of its files several tests that had been developed in cooperation with the U. S. employment Service. These included: The General Aptitude Test Battery, given to some 73,800 persons in the past year and consisting of 11 paper-and-pencil and four apparatus tests to measure 10 basic abilities; (2) a series of Specific Aptitude Test Batteries designed to reveal an applicant's aptitude for a specific occupation; (3) oral trade questions, measuring job proficiency of experienced workers.

Dravo's objective was to find inexperienced workers who had potential ability for drafting, and could be trained by the corporation.

Since no test battery had been developed for structural draftsman trainees, the employment service agreed to set one up, tailor-made for the Dravo requirement. (Most of the Specific Aptitude Test Batteries had been developed to take care of a particular employer's needs. Afterward, the test becomes standard for selecting candidates for the same type of work at other plants.)

This is how it was done:

The General Aptitude Test Battery was given to 31 experienced draftsmen. At the same time, supervisors were asked to rate these experienced workers as to their relative success on the job. Their performance on the test was then compared with their

The Solution starts with the interviewing of likely candidates, for personality, background. Then paper and pencil take the place of the interviewer, to show up mental ability, grasp of general subjects.

MANUAL DEXTERITY is tested on peg boards like this one, and a series of other devices tested over long periods.

SUCCESSFUL in the tests, the new draftsman-trainee goes to work. Records indicate he'll stick, become a real asset.

performance on the job to determine which of the initial tests tended to show high scores for the most proficient workers, average scores for the average and low scores for the mediocre ones.

The comparisons were appraised statistically and compared with the job-analysis information, to determine whether tests found to be statistically significant were at the same time logical in terms of job duties.

The conclusion: To be a successful draftsman, a person must have above average intelligence, numerical ability, spatial ability, and form perception. Therefore, tests measuring these abilities were put in the aptitude test battery for selecting trainees for Dravo.

Minimum scores for passing were set according to amounts of the abilities required for successful performance on the job.

With the test set up, the employment office combed its files for likely applicants. They were called in for interviews and testing, and those who passed the test were referred to Dravo.

Dravo has been using the test for eight months, during which time nine draftsman trainees were selected. Company reports say these men are of much higher quality and appear to be learning more rapidly than those hired prior to the test. Whereas previously 13 out of 30 trainees failed to complete their training, none of the nine screened has failed thus far.

Through the U. S. Employment Service and its affiliated state services, this test is now being made available for other contractors seeking structural draftsman trainees.

Such testing service is valuable to workers as well as industry. It helps to match a man to a job not only on the basis of past experience, but also on the basis of potential ability.

For example, one of the draftsman trainees at Dravo had been a pipefitter for six years and wanted a change. The test disclosed that he had native potentiality for the work and he was hired as a trainee.

Another use of the test is to shuffle workers into jobs which come closest to utilizing their highest ability. In this way, a worker avoids taking a job that is either far above or far below his ability. Of course, having workers in jobs for which they are best fitted is bound to improve morale and plant efficiency and production.

In Colorado, for example, specific aptitude test batteries are being used by one employer to relocate his working force.

According to Charles E. O'Dell, chief of counselling, selective placement and testing for the U. S. Bureau of Employment Security, tests have:

Cut training time as much as 50 percent;

Reduced attrition during the training period;

Cut down on turnover among those who complete their training;

Prevented tendency of employers to "over select" by picking workers far superior to the job they are to fill;

Gives the employer a chance to spot workers who are likely to move up in the organization.

NO OPERATOR
NO DIALING
NO DELAY
YOU GET
INSTANT
RESPONSE
WITH
WHEELER
SELF-POWERED
TELEPHONES

You get *direct,* private communication with a pair of these convenient, easy-to-install telephones. Operation is simple — remove handset, press ringing button and talk when answered. Service cannot fail due to power outages because no batteries or other power supply are needed. Efficient up to 20 miles. Safe, tough, quick and dependable. Install for temporary or permanent use, indoors or out.

See your jobber today or write direct for booklet SA-8.

THE
WHEELER
INSULATED WIRE CO., INC.
2209 EAST AURORA STREET
WATERBURY 91, CONNECTICUT
SERVICE QUALITY WHEELER DEPENDABILITY
DIVISION OF THE SPERRY CORPORATION
MAGNET WIRE • COILS • BALLASTS

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Rescission of Bid

In a recent case[1] where the court permitted a contractor to withdraw his bid by reason of a unilateral mistake, the court stated:

"1. A competitive bid submitted under statutory privilege and regulation is in the nature of an option to the municipality, based upon a valuable consideration.

"2. An option for which a consideration had been given is both an offer and a unilateral contract.

"3. For a unilateral mistake in a contract, the remedy in a court of equity is rescission.

"4. A mistake exists when, under some erroneous conviction of fact, a person does or omits to do some act which but for such erroneous conviction he would not have done or omitted.

"5. Mistake may arise from unconsciousness, ignorance, forgetfulness, imposition or misplaced confidence.

"6. The essential conditions to relief by way of rescission in a court of equity for a unilateral mistake are (1) the mistake must be of so great a consequence that to enforce the contract as actually made would be unconscionable; (2) the matter as to which the mistake was made must relate to the material feature of the contract; (3) the mistake must have occurred notwithstanding the exercise of reasonable care by the party making the mistake, and (4) it must be able to get relief by way of rescission without serious prejudice to the other party, except for loss of his bargain."

In this case the City of Atlantic City advertised for bids for the performance of certain work. Plaintiff contractor submitted a bid and accompanying the bid was a check for $5,000 to assure the execution of the contract.

When the bids were opened it was disclosed that plaintiff was the low bidder with a price of $143,171. The next highest bid was $205,395, and the highest bid was $334,604. After bids were opened plaintiff contractor discovered that he had made an error in his computation and that the price which he should have bid was $193,421.

Upon discovering his error, plaintiff immediately and before the contract was awarded to him, got in touch with defendent and advised its representative of such mistake and that the error was so great that he could not proceed with the contract and, as a matter of fact, it was doubtful whether he could obtain a performance bond as required under the specifications.

Plaintiff was later informed that it had been awarded the contract and a form of the contract was forwarded to it for execution. In the face of the error in computation, plaintiff was unable to obtain a performance bond as required and thereupon returned the contract to the defendent, setting forth that not only would it sustain a loss if it were compelled to complete the contract, but that it was impossible to obtain the performance bond required. The defendent thereupon declared the $5,000 deposited by plaintiff to be forfeited.

The action was brought to recover the $5,000 and the contractor was allowed a recovery.

In some states statutes exist which provide that once the bid has been submitted it cannot be withdrawn. See, ENR, July 8, 1949, p. 118.

(1) Conduit & Foundation Corp. v. Atlantic City, 64 A. 2d 382 (Superior Court of New Jersey, Feb. 28, 1949.)

Rental Value of House As Element of Damage

Where a contractor unreasonably delays the completion of a house, the owner is entitled to recover as an element of damage, the fair and reasonable rental value of the house for the period of the delayed completion. This is so irrespective of whether the owner intended to occupy the house himself or whether he intended to rent it.[1]

(1) Morgan-National Woodworking Co., Inc. v. Cline, 84 N.E. 2d 461 (Supreme Judicial Court of Mass., March 3, 1949) and numerous cases there cited.

Breach of Contract

He who commits the first substantial breach of a contract cannot maintain an action against the other contracting party for failure to perform.

In a suit to recover damages for being prevented from performing a contract, it is incumbent upon the plaintiff to prove the existence of the contract and to prove performance by him or where the contract has not been fully performed, that plaintiff was prevented from performing it by reason of the wrongful acts of the defendant.[1]

(1) Ehlinger v. Bodi Lake Lumber Co., et al., 36 N.W. 2d 311 (Supreme Court of Michigan Feb. 28, 1949.)

You should talk to the owner of this truck!

International KB-7 with dump body

THE OWNER of this International KB-7 uses a dozen International Trucks in his engineering work. (Four are dump trucks, 2 flat beds, 1 oil spreader and 5 Concrete Ready-mix.) He knows what they can do, and how well they do it.

He speaks from experience when he says:

> "The new KB-7 dump truck is a pleasure to drive, and has been getting 9½ miles to the gallon of gas under conditions which should use a good deal more—that is, a lot of starting and stopping and short hauls."

And we aren't exactly speaking as amateurs in the business when we tell you this:

International Trucks are the products of 42 years of real truck engineering. They are available in 22 basic models, 1000 truck combinations, gross weight ratings from 4,400 to 90,000 pounds—to give you the truck that's specialized right for your job. And, they're backed by the nation's largest exclusive truck service organization.

Talk to any International Truck owner. Talk to any International Truck driver. Then you'll know why it will pay you to see your International Truck Dealer for the very next truck you buy. Call him soon.

International Harvester Builds McCormick Farm Equipment . . . Farmall Tractors . . . Industrial Power Motor Trucks . . . Refrigerators and Freezers

Tune in James Melton and "Harvest of Stars" NBC, Sunday afternoons

INTERNATIONAL TRUCKS

INTERNATIONAL HARVESTER COMPANY • CHICAGO

Extensive housing activity continues

By T. D. MacGregor
Assistant Editor

In all parts of the United States large scale housing projects are under way, indicating that the year 1949 will see great progress in the efforts to overcome the housing shortage which has persisted through all the postwar years. A review of developments included:

A Million Houses a Year—The record-breaking building pace set by the building industry is continuing this year, the National Association of Home Builders reports.

Private home builders are still going along at close to a million-houses-a-year pace, Frank W. Cortright, executive vice-president of the association said. He pointed to latest Bureau of Labor Statistics figures showing that more than a half-million new homes and apartments were started in the first seven months of this year. In July, according to BLS figures just released, 96,000 new units were started. This shot the total for the first seven months of the year to 544,700 new homes and apartments put under way.

Both June and July "starts" exceeded those of the same two months last year. In 1948 the figures were 97,800 and 95,000 respectively. The 1949 totals are 100,000 and 96,000.

Ohio Slum Clearance—Ohio Planning Conference hopes to help Ohio cities get planning under way for slum clearance projects. Almost all Ohio cities find themselves barred from benefits of new state and federal slum clearance laws because of inadequate planning, according to Nicholas F. Nolan, president. The cities of Youngstown and Columbus are reported to be leading the move to assemble the technical staffs necessary. Cleveland, Cincinnati, and Dayton and a few small cities are said to be the only ones equipped with general plans, a prerequisite to eligibility for the urban redevelopment grants.

State-aided Housing—The application of the Auburn, N. Y., Housing Authority for financing by the state of a low rent housing and slum clearance program there has been approved by State Housing Commissioner H. T. Stichman. It calls for a project for 118 low income families. The state would lend $1,200,000 to build the project and will pay cash subsidies up to $42,000 annually to help keep rents low. Ithaca, N. Y., will also receive state aid for housing, as the local housing authority will get $1,040,000 for low rent housing and community redevelopment, providing housing for 100 low income families and clearing the city's worst slum area.

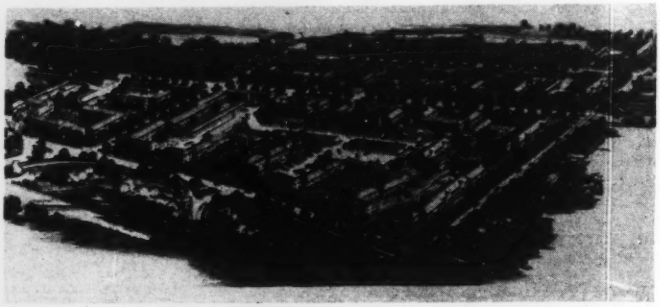
New Homes for Galveston—W. R. Reid, a lumberman of Houston and Corpus Christi, Tex., is planning 182 dwelling units in the East End flats area of Galveston. It is planned to construct homes that will sell for from $7,500 to $8,500, including sidewalks, driveways and planting of shrubbery. These dwellings will be available to world war veterans without down payments. Mr. Reid is head of the Bayshore Corp. which already is constructing nine apartment structures, of 72 dwelling units, at a cost of $400,000. The new development will call for the expenditure of about $1,000,000.

On Aug. 16, the Public Housing Administration authorized Galveston to construct a $4,500,000 low-rent housing project of 600 units under the new public housing program. Galveston was given a $130,000 loan to finance the planning.

N. Y. Suburban Developments—Among the new housing projects just announced for New York City suburban areas are these: In New Jersey Fort Lee, Englewood, Bayonne and Irvington are among the active centers. Sarner & Salow, builders, are receiving applications for suites in Linwood Park, a $30,000,000 garden apartment development on Route 9-W and Linwood Ave. in Fort Lee—on top of the Palisades just across the George Washington Bridge from New York—which will provide accommodations for 2,486 families. Englewood Village, a 62-family garden suite project at Engle St. and Hamilton Ave., Englewood, will be ready for occupancy this month. Sixty families will be provided for in the three 3-story buildings now under construction in Bayonne at 48th and 49th Sts. and Avenue C. In Irvington the Clinton Arms project will contain 46 suites.

In the Borough of Queens a $3,500,000 project of 384 garden type apartments on a site of 21 acres has been started in the Laurelton section by Sam Praver of Praver & Sons, builders; while in another section of that borough on Union Turnpike between 174th and 176th Sts., there will be a colony of ten custom-built dwellings. The houses will be priced at $16,000. The builder is the Chizner Estate Bldg., Corp. and the architects are Benjamin H. and Bertram Lee Whinston.

Development of a 10-acre tract in Forest Hills, with a $3,500,000 garden-type apartment community for 400 families is announced by A. B. Wolosoff and David Minkin builders. The project overlooking the Flushing Meadow lakes, is to be known as Lakeview Gardens and is already in course of construction on the site fronting on the Grand Central Parkway and bounded by 65th Road, 110th St. and 66th Road. The property adjoins Flushing Meadow Park, which has just been designated by Robert Moses, Commissioner of Parks, for a huge re-



FOR 384 FAMILIES—An architect's sketch shows Laurelton Terrace, a $3,500,000 garden-type apartment development for 384 families being erected by Praver & Sons, builders, on a 21-acre site at 234th Street and Merrick Road in Laurelton, Queens, N. Y. City. The project, planned by Benjamin Braunstein, architect, will provide three-room and four-room apartments at rentals starting at $85 a month. Initial occupancy is scheduled to begin in October.

development program to provide complete recreational facilities. The development, from plans by Sohn & Weston, architects, will emphasize early American architectural influence in the use of red brick, white trim and peaked roofs. Buildings will be three stories high and cover only 25 per cent of the land.

Redevelopment in Chicago—Skidmore, Owings and Merrill, a Chicago architectural firm, has been retained by the New York Life Insurance Co. to prepare plans for the re-development of a blighted area in the heart of Chicago's South Side, which will provide apartments for 1,400 families, and an adjacent shopping center.

Under an agreement with the Chicago Land Clearance Commission, the insurance company will construct modern apartments for occupancy at medium rentals on a site which fronts on Lake Michigan from East 31st to 33rd Streets. The Land Clearance Commission is acquiring the site and an additional area for the shopping facilities.

On Aug. 17 the Chicago Housing Authority received approval of the Federal Public Housing Administration for a program to build 21,000 subsidized, low-rent dwelling units at a cost of $210,000,000 under the new $16,000,000,000 National Housing Act.

Construction of the buildings is not expected to begin before next year, since none of the sites for the units has been selected yet.

E. J. Kelly, federal housing administration district director, Chicago, has announced construction plans for six apartment buildings there to cost about $8,500,000 and to contain 845 rental units. Five of the buildings will be on the north side and one on the south side. Each of the six buildings will cost $1,500,000 and each will have 147 two-room apartments and three and one-half room units. Architects are Shaw, Metz and Dolio; Frank McNally and Associates; and Monroe Bowman. The Chicago Housing Authority has plans for a total of 40,000 homes.

Other Developments—Other large housing projects include these:

The St. Louis Housing Authority has plans for a $7,500,000 project to provide quarters for 890 families in the vicinity of Ninth and Carr Sts. on the north side.

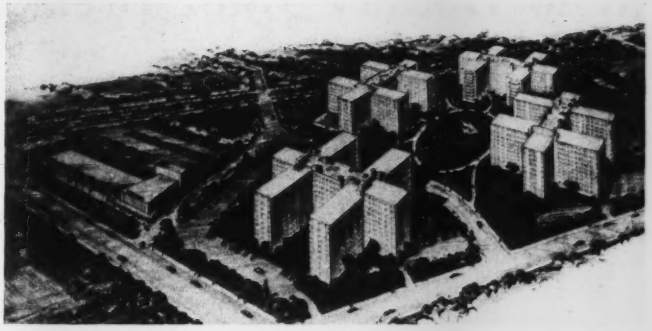
A $30,000,000 public housing project for Atlanta, Ga., has been approved by Public Housing Administration. A total of 3,500 housing units will be constructed, 2,000,000 during the first year and 1,500 units the following year. Units are to be constructed at an average cost of $8,500, including cost of lot, improvements and utilities.

Another large housing development is planned for the Atlanta area. The Long Construction Co. is to build 3,000 houses on a 1,200-acre tract in northern DeKalb County at a cost of $25,000,000. Houses will sell for an average of $7,000 each. The company said it is acquiring the land, building the homes and erecting other buildings essential to community life through a corporation named Chamblee Acres, Inc. The development will extend two and one-half miles along the Chamblee Highway north of Atlanta. Church and school sites will be provided, the company said.

The Key West, Fla., housing authority has made an application for FHA approval of a plan to construct 270 housing units to cost $1,040,000, either on waste land to be developed or as a slum clearance proposition.

On Aug. 17, the City Council of Houston, Tex., voted to let the Housing Authority of Houston apply for $300,000 from the Federal Housing Authority to finance plans and a survey for building 1,320 low rent houses in Houston in the next two years.

The housing problem at the six Ohio state-operated universities is expected to be alleviated by action of the recent legislature, which authorized the six institutions to borrow up to $6,000,000 in the aggregate to construct living and dining facilities for their undergraduates. Under this law, the expansion of the dormitory facilities at the schools will not be an expense against the state treasury, for the building loans are to be paid back from revenues earned in student living quarters and dining halls.



APARTMENT BUILDINGS—The Parkway, four 10-story apartment buildings, containing 1,744 suites, and a modern shopping center (shown at left), will rise on the former Ollemar estate, in Irvington, N. J., at an estimated cost of $20,000,000. Maurice and George Levin are the builders. Kelly & Gruzen are the architects. New Jersey's largest FHA-insured mortgage commitment totalling $14,316,000 has been made on the project, first units of which are scheduled for occupancy in the summer of 1950. Development will feature underground garage and outdoor parking for 850 cars, and roof-top recreation.

Governor Smith Houses—The New York City Housing Authority is distributing applications for Governor Alfred E. Smith Houses, a low-rent public housing project on the lower East Side. This is a 1,940-apartment state-aided project and selection of tenants will be based on the relative need of the families applying.

Rents, which average under $9 a room per month, including utilities, have been approved.

Located at the foot of Brooklyn Bridge in the neighborhood where the late Governor Smith was born and grew up, the project occupies a 21-acre site. The section now being built will provide 1140 of the total of 1940 apartments, the first of which will be ready for occupancy this fall.

PHA's Program—Public Housing Administration's 6-year program to provide 810,000 units of low-rent public housing is ready for action.

Application forms and instructions for participation have been mailed to about 500 local housing authorities in 42 states. These authorities, and others which may be organized, will build, own and operate the housing projects with federal financial assistance (ENR Aug. 4, p. 23).

Commissioner John T. Egan has instructed the 10 field offices of the Public Housing Administration to assist local housing authorities in preparing their applications for participation if help be needed. These offices are located in New York City, Philadelphia, Detroit, Chicago, Richmond, Atlanta, Fort Worth, Los Angeles, San Francisco and Seattle.

Who Doesn't Want Breakage Like This?

Here Is What Happens When You Use The ROCKMASTER "16" Blasting System!

HERE's the kind of rock-pile blasters dream about! Rock ready for the shovel . . . no boulders too big for the dipper . . . a clean face . . . no toe . . . no backbreak. Blasters get the kind of results they want in quarries, mines, and construction jobs—on the surface and underground—when they use the ROCKMASTER "16" Blasting System to "tailor" the blast to the job. In stripping, they can shoot the burden like this without degrading the coal!

The original Atlas ROCKMASTER development now includes *sixteen* millisecond delay detonators, each timed within thousandths of a second. Your job may call for two, three, even all sixteen. We help you select them to fit the particular job. Drill pattern and explosives are based on what you want to accomplish. This all adds up to greater control over breakage and throw than was ever before possible—plus, in many cases, important savings in drilling and dynamite.

In addition to its many other advantages, ROCKMASTER "16" cuts noise and vibration to a minimum. Bigger shots (generally more economical) can often be made in quarries, strip pits and construction jobs without complaints from neighbors. In underground workings, there is less danger of damaged or loosened roof supports—a real safety consideration.

Write today for booklet on the Atlas ROCKMASTER "16" Blasting System. It includes diagrams for typical loading in quarries, strip pits, mines, and many types of construction.

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

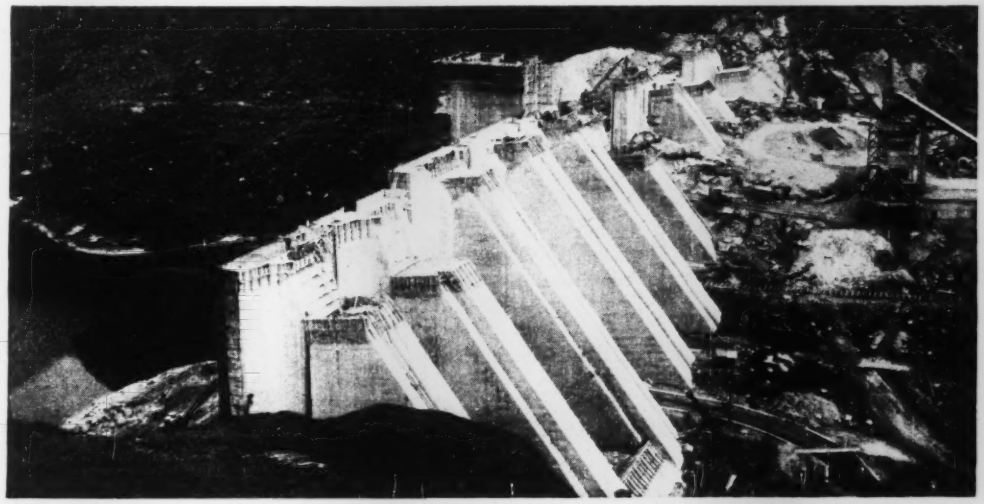
ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES
"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

DEVELOPMENTS ABROAD

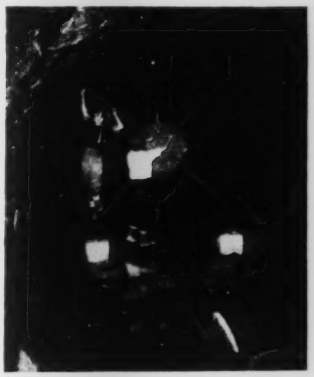


BRITAIN'S SECOND LARGEST hydroelectric development, at Loch Sloy, Perthshire, Scotland, is nearing completion.

PENSTOCKS complete diversion of Loch Sloy water to Loch Lomond, background.

Britain's power program connects Highland lakes

Nearing completion 50 mi. from Glasgow and high in the Scotch highlands is Britain's second largest hydroelectric development, tying Loch Sloy and Loch Lomond together by a 1.75-mi. tunnel. The 165-ft. high dam at Loch Sloy will impound snow melt from Ben Vorlich. The 15-ft., 4-in. tunnel, which splits into two 500-ft. long shafts, will pass 500,000 gal. through the mountain daily into power plant on Loch Lomond, generating 120 million kwh. yearly. Two thousand workers are employed. A 1.5-mi. conveyor belt brings crushed rock to the job. (Wide World Photos)



TWIN TUNNELS, 10 ft. dia. concrete-lined, will serve four 32,500 kw. turbines.

Industry

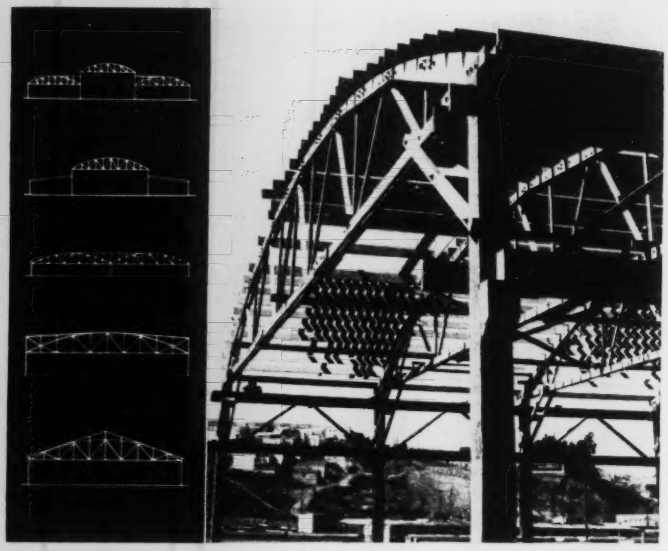
Brazil—The government of Brazil has signed agreements for construction of the first big petroleum refinery in the country. It is to be so large that it will be several years before it can be in production. The engineering and installation will be done by a United States firm—Pan American Hydrocarbon Research. A French group, Compagnie de Fives—Lille and Schneider & Cie, will provide the material and equipment. The cost is estimated at $60,000,000.

The refinery is being planned for a 45,000-barrel-a-day production, using imported petroleum, at least until potential Brazilian supplies are developed. The location has not yet been announced. Originally the National Petroleum Council planned to build the refinery at Belem at the mouth of the Amazon, but apparently that idea has been abandoned since Belem is about 2,500 miles from the country's industrial areas of Rio de Janeiro and Sao Paulo while overland transportation is practically impossible.

Last year Brazil spent about $300,000 a day in very scarce dollars for petroleum products, of which about $122,000 a day was for gasoline. It is believed that this bill can be reduced drastically by local refining, and that eventually Brazilian refineries will be supplied by Brazilian oil.

Contracts for two other refineries—one at Sao Paulo and the other at Rio—have been granted to two Brazilian companies, Refineria e Exploracao do Petroleo Uniao S.A. and Refinaria do Petroleo do Distrito Federal S.A. respectively.

Two major factors in Brazil's greater need for petroleum products are the increased use of motor transportation as new roads are built and the greater use of fuel for industrialization.



Arch Teco Bowstring Truss

...Handyman of Roof Structures

Here is a truss that does more than play first fiddle—it leads the whole orchestra as well.

It provides enduring, economical construction whether the span is 25 feet or 250 feet. Normal roof contour is arched, but by use of various build-ups it may be flat, pitched or sawtooth. Web members may be extended below the bottom chord to support mezzanines, balconies, walkways, canopies, etc.

Various treatments of multiple span buildings are illustrated above. Local loadings such as hoists, monorail installations and heating and cooling units may be accommodated in the design.

Unobstructed floor space is provided for efficient operations, yet the cost frequently is less than post-and-girder construction.

Carefully engineered, constructed of structural quality Douglas fir timbers, and joined with bolts and split ring connectors, Timber Structures Arch Teco bow-string trusses are exceptionally strong and stiff. Camber is high after load is placed and is easily maintained.

A new catalog of Timber Structures roof trusses will soon be off the press. Get a free copy from the Timber Structures office nearest you, or write directly to us.

TIMBER STRUCTURES, INC.

P.O. Box 3782 • PORTLAND 8, OREGON

Offices in Boise, Idaho; Eugene, Oregon; Lawrenceville, N.J.; Chicago; Dallas; New York; Seattle; Spokane.

TIMBER STRUCTURES, INC., OF CALIFORNIA — Oakland and Sacramento

Local Representatives Coast to Coast

Foreign Briefs

The federal government of Australia has approved extensive expenditures for the building of new port facilities in Papua and New Guinea. Minister for External Territories Ward, says existing port facilities were intended for wartime use only, and it has been decided to replace rather than repair them.

The Ministry of Public Works in Lebanon announces that $11,137,500 has been allocated for immediate use in the construction of water systems for a number of towns.

British and Dutch engineers are going to Kuala Lumpar, Malaya, soon to lay two rubber paved roads by the new "Mealorub" process as part of a natural rubber development scheme. This process, in which powdered natural rubber is used, originated in Indonesia. Several tests have been made with it in the United States. The tests in Malaya will be watched by the Rubber Research Institute and other experts.

Nearly 20,000 workers are engaged in the construction of a 5½-mile dam on the lower Bhavani River in Madras province, India. The dam will irrigate 200,000 acres in Coimbatore district. The project, estimated to cost $9,600,000, is expected to be completed in four years, instead of seven as originally planned.

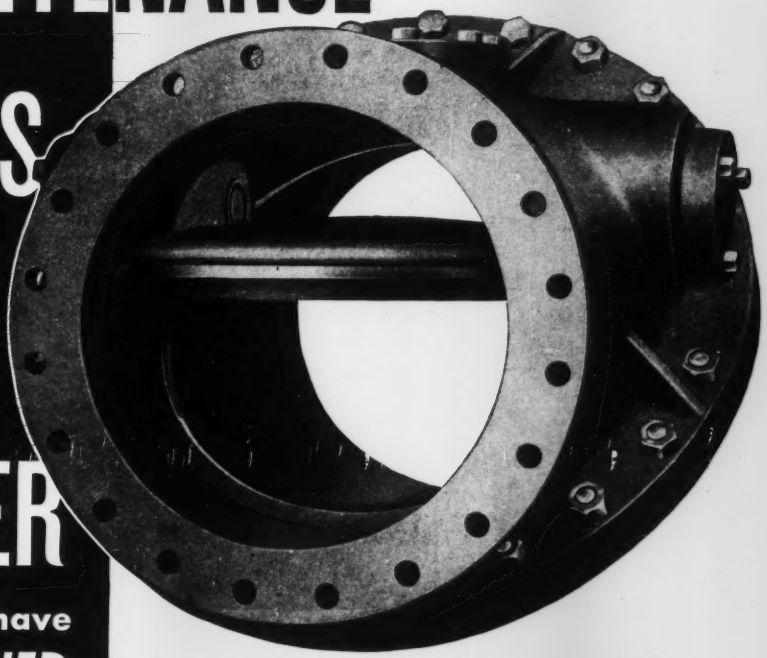
Second-hand steel rails are being imported from France to Australia to be used there as telegraph and telephone poles. They are from French railway lines so heavily bombed during the war that new rails had to be made. The used rails will provide 18,000 poles or enough for 2500 miles of overhead telephone or telegraph lines. All will be used in South Australia where timber for such purposes is scarce.

The Division of Industrial Development, Department of Postwar Reconstruction of Australia, in a report issued in Melbourne, recommends construction of a modern oil refinery with a capacity of 500,000 tons a year. Australia's existing five refineries together treat 649,000 tons of crude a year.

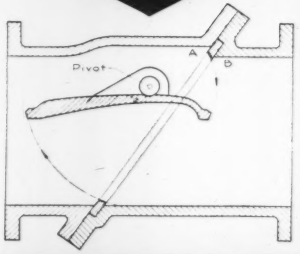
The report does not state whether the government or one of the foreign oil firms is to carry out the project. However, the Commonwealth government is already in the oil business through the fact that it has a controlling interest in Commonwealth Oil Refineries Ltd.

MAINTENANCE COSTS ARE LOWER

when you have *CUSHIONED CLOSING*



of — CHAPMAN CHECK TILTING DISC VALVES



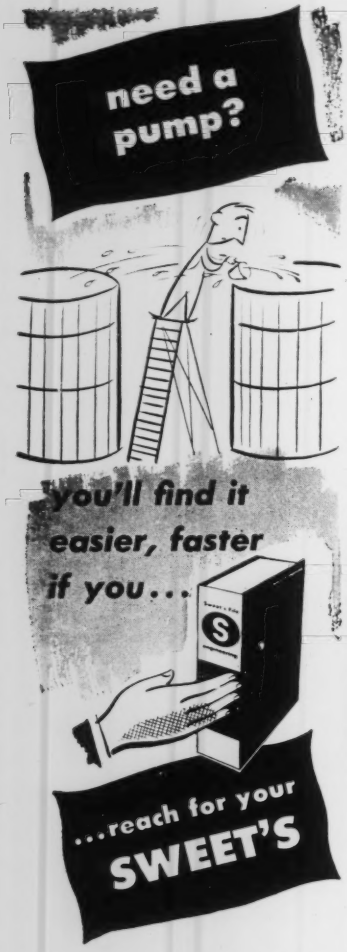
Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

That's right! Maintenance costs *are lower* with Chapman Check Valves . . lower because the balanced disc works *with the stream.* There's no slamming to cause destructive pipe line stresses and increase maintenance costs. Nor is there any rubbing on seats . . . the disc closes quickly and quietly with no sliding or wearing action.

Yet that's only half the story. Head losses are actually 65% to 80% lower than for conventional type check valves. And, when used on pump discharge lines, substantial power savings are possible.

Why not write today for engineering data and reports of tests.

THE CHAPMAN VALVE MFG. COMPANY
INDIAN ORCHARD, MASSACHUSETTS



When you need specific information on materials, equipment or services, reach for your Sweet's File, Engineering (the big blue file). It contains 345 manufacturers' catalogs full of useful information on thousands of products . . . from absorbers—gas, to zinc galvanizing. Cross indexing speeds finding.

If Sweet's File, Engineering, is not available in your office, make request immediately for application form. Files are distributed FREE to qualified organizations and individuals.

Sweet's

CATALOG SERVICE

for easier, faster selection of products

119 W. 40th ST., NEW YORK 18, N. Y.

MEN AND JOBS

Francis E. Twiss, formerly highway specialist for the transportation and communication department of the Chamber of Commerce of the United States, has been appointed director of planning and economics of the International Road Federation. A civil engineer graduate of Rensselaer Polytechnic Institute, Mr. Twiss served as a lieutenant commander in the Navy Civil Engineer Corps during World War II. Prior to his work with the Chamber of Commerce he was assistant professor at the Bureau of Highway Traffic at Yale University in charge of the university's traffic engineering programs.

Revoe C. Briggs has been appointed district engineer for the Surface Water Branch, Water Resources Division, U. S. Geological Survey at San Francisco, Calif., where he has served as acting district engineer since the retirement of Harry D. McGlashan. Mr. Briggs was graduated from Stanford University in 1913. He has been with the Geological Survey since January, 1917, in Oregon, Washington, D. C., and Venezuela, in addition to his long period of service in California. Mr. Briggs' 32 years of service in the Water Resources Division, many of which were spent as Mr. McGlashan's principal assistant, has provided him with the experience to solve the many problems connected with the use of water in California and the administration of the San Francisco district.

John P. Riley, director of development of the New York City Housing Authority, has received the first annual award of the New York Association of Consulting Engineers, an organization of 40 of the leading consulting engineering firms in the metropolitan area. Mr. Riley has been responsible for the construction of 43 permament housing developments in New York.

These men are building the piers for Penrose Avenue Bridge in Philadelphia, Pa. All with Foley Bros., Pleasantville, N. Y., contractor, they are, left to right, Jim Allen, project engineer; Jack Kilbourne, general superintendent, and Art Ruge, vice-president of Foley. Daniel H. Young is the project manager.

M. Alfred Kaehrie, West Hartford, Conn., Connecticut highway engineer, has been named engineer of location and design for the highway department to succeed **Daniel H. B. Starr,** who retired in May. Mr. Kaehrie has been associated with the department since 1932.

H. P. Cecil is acting resident highway engineer at Warsaw, Va. **H. B. Tatum** succeeds Cecil as assistant resident engineer at Wytheville.

Mason A. Butcher, Nebraska state airport engineer, on loan from the state highway department, has resigned to go to Washington, D. C., to be traffic engineer for the city transit lines. **S. R. Gilbert** will succeed Butcher as state airport engineer.

General John J. O'Brien, who was in charge of all Army real estate during the war, has been elected president and general manager of the U. S. Steel subsidiary Gunnison Homes, Inc., of New Albany, Ind.

Prof. William H. Scheick, coordinator of the Small Homes Council at the University of Illinois, has been granted a year's leave, beginning Sept. 1, to serve as the first executive director of the newly organized building research Advisory Board in Washington, D. C. The board was organized by the National Research Council and operates under the jurisdiction of that council.

James M. Gordon of Dover, Del., bridge engineer of the Delaware State Highway Department, with the division since June, 1930, has resigned to go with the Federal Public Roads Administration at Lansing, Mich., as bridge engineer.

Charles A. Luning has resigned as engineer and road commissioner of Tehama County, Calif., and will become the county's construction engineer on the Jelly Bridge. He has been employed in the county engineer's office for 30 years. **S. E. Avery,** former supervisor, has been appointed to the position of road commissioner to succeed Luning.

After 32 years of active and reserve service with the Army Corps of Engineers, **Col. Clement F. Waite** of Fresno, Calif., has retired. He will continue to work as an assistant district engineer for the state's division of highways. Colonel Waite entered the Army as a second lieutenant in 1917 following his graduation from the University of Washington. After World War I, he became a reserve officer but returned to active service as a major in 1942. He served as operations officer on the Alcan Highway, later occupying a series of posts with the Army Corps of Engineers, and he rose to the rank of colonel before returning to the reserve forces early in 1946.

Brig. Gen. Gordon R. Young, Washington, D. C., Engineer Commissioner, is to be named United States delegate to the International Navigation Congress in Lisbon, Portugal. The appointment is made on the recommendation of the Army chief of engineers with the approval of the Secretary of State. The organization consists of governmental representatives and interested individuals from various countries who meet every few years for exchange of technical information on ports, harbors, rivers, channels and canals.

John A. Giles, city engineer of Binghamton, N. Y., will retire soon. He has served as city engineer under nine mayors and is himself a former mayor.

Archie B. Uzzel, city engineer at Canton, N. C., has been named superintendent of public works at Hickory, N. C., succeeding the late Donald Wilfong. Before going to Canton he was with the city of Raleigh, N. C., and with the North Carolina Highway Department.

Maj. Gen. Hugh J. Casey will become division engineer for the Ohio River area in August, the U. S. Army has announced. He succeeds **Maj. Gen. Joseph C. Mehaffey,** who is retiring. Casey has been chief engineer on Gen. Douglas MacArthur's staff since 1941.

KiFS Bond Plaster Permanently!

Part of 40,000 sq. ft. of Kiffed ceilings and beams at St. Joseph's Collegiate Institute, Buffalo, N. Y.

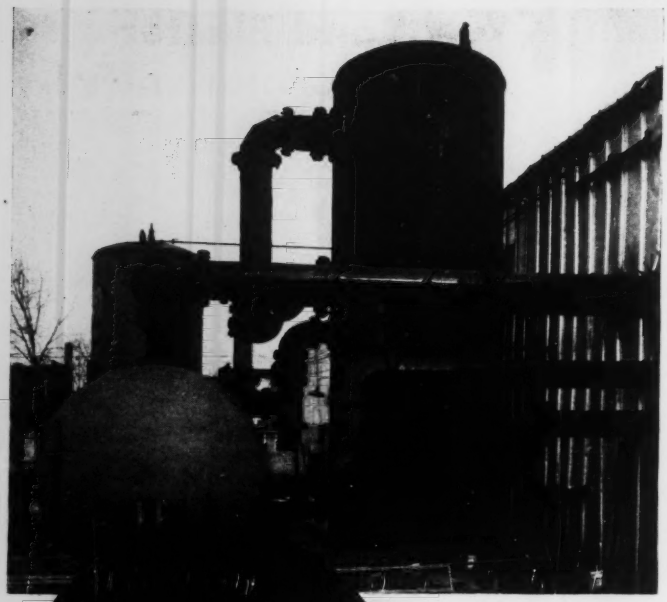
Kifs can be rented or purchased. For full information on this new, fast, low cost, method of bonding plaster permanently to concrete, write us now.

BUFFALO PRODUCTS, Inc.
A Subsidiary of Frontier Industries, Inc.
317 BABCOCK ST., BUFFALO 10, N. Y.

PLYMOUTH LOCOMOTIVES FIRST
TO BE RECOMMENDED BY MEN WHO KNOW

BECAUSE PLYMOUTH LOCOMOTIVES ARE:
Built Right; Built Well
Economical To Use; Economical To Maintain
Dependable In Performance; Performance Proved
Operative Under Many Conditions; Adaptable to YOUR Operations

FOR COMPLETE DETAILS WRITE TODAY
PLYMOUTH LOCOMOTIVE WORKS
DEPT. A-4 PLYMOUTH, OHIO



For Air-Handling Problems...
NAYLOR PIPE
Is the Solution

The job of handling air in underground construction is simplified with Naylor light-weight pipe. It is the practical and economical answer for push-pull ventilation, air locks and high pressure air service.

Naylor's exclusive Lockseam Spiralweld structure provides light weight with additional collapse strength. Leaktightness and safety. Ease of handling. Simplified installation through accurate diameter and standard weight ends. Economies in material and transportation. Along with these advantages, Naylor offers an outstanding fabrication service to provide pipe and fittings to your exact requirements.

Naylor pipe is available in sizes from 4" to 30" in diameter and thicknesses from 14 to 8 gauge. Write for full details or send specifications for quotation.

Naylor Pipe

NAYLOR PIPE COMPANY
1248 East 92nd Street, Chicago 19, Illinois
New York Office: 350 Madison Avenue, New York 17, N. Y.

Charles McG. Brandl, of Asheville, N. C., who has had extensive engineering experience in the Panama Canal Zone, has been named to head an American construction force which will leave September 1 for Beirut, Lebanon, where he will superintend the construction of a modern airport and the instruction of native laborers in the use of American machinery.

Alfred P. Norwood of Henderson, N. C., has been named assistant engineer in the city public services department at Greensboro, N. C. A graduate of North Carolina State College, he formerly was associated with a Raleigh, N. C., firm as a junior engineer.

Dames & Moore, foundation engineering and applied soil mechanics, have moved their New York office to 140 Cedar St., New York 6, N. Y.

A. J. Thompson, former engineer of Stutsman County, N. D., is now engineer of Ramsey County.

Walter E. Lorence & Associates, new legal engineering consulting firm, has been organized in Washington, D. C., by Col. Walter E. Lorence, who recently resigned as executive vice-president of the Ohio Valley Improvement Assn. Previously he was district engineer in charge of the Army Corps of Engineers' Pittburgh office.

Ralph D. Brooks, Monrovia, Calif. civil engineer, has been appointed city engineer of Azusa, Calif.

Edwin L. Mills has been named as staff highway engineer of the Western Highway Institute, in San Francisco. He leaves the highway division of the California department of public works after nine years service. He had formerly been an engineer with the U. S. Public Roads Administration. The institute also retains **R. A. Allen**, former Nevada highway engineer, as consultant.

O. C. Smith, Y. Smith and **P. W. Rodgers** of the Curly Construction Co., Inc., announce that their main office is now at 555 Cedar Lane, Teaneck, N. J.

Weldon F. Robb, Mt. Vernon, Ohio, has been appointed division maintenance engineer of the Ohio Highway Department, in charge of Coshocton, Fairfield, Guernsey, Knox, Muskingum, Licking, and Perry counties. He had been bridge engineer in the Newark division for ten years.

ANNOUNCING

. . . Immediate Availability

OF THE NEW AND REVOLUTIONARY

TYLOX

RUBBER COUPLING

for Vitrified Clay Pipe

Universal Vitrified and U. S. Concrete PRODUCTS

- Sewer Pipe *(Vitrified)*
- Sewer Pipe *(Concrete)*
- Liner Plates
- Aerodrane Filter Block
- Tylox Couplings
- Slipseal Sewer Joint
- Segment Block
- Meter Boxes
- Ship-Lap Wall Coping
- Septic Tanks
- Drain Tile
- Fire Clay
- Flue Lining
- Stove Pipe
- Chimney Tops
- Chimney Pots
- Fire Brick

The full floating, cushioned and multiple rubber sealing Tylox Coupling is now available to all Universal Sewer Pipe customers.

Tylox Rubber Coupling Joints are pre-assembled . . . shipped complete and ready for coupling. The Tylox Rubber Coupling matches Vitrified Clay Pipe in resistance to acid, alkalis and all waste material action.

Use of Tylox Couplings make joints leak proof for the life of the line. Tylox Couplings eliminate dimensional variation of sockets—assure full contact with entering spigot.

TYLOX RUBBER is specially compounded for corrosion resistance—is unaffected by sewage and industrial wastes. Its resilience protects against breakage . . . permits leveling and bedding of line to grade . . . safeguards reasonable settling in line . . . gives leeway in temperature expansion and contraction . . . smooths line flow by instantly self-centering spigot and bell.

Tylox is economical in the "in the ditch cost". Installation is simple and easy. Check with Universal Sewer Pipe on the Tylox lifetime flexible rubber joint that protects against leaks and pipe failure.

Ask for four page brochure "Tylox . . . Flexible Rubber Coupling Extraordinary".

SALES OFFICES:

Baltimore, Md. Halethorpe Branch, P. O. Box 7769, Tel. Elkridge 790.
Cincinnati, Ohio—P. O. Newtown, Ohio, Box 215—Tel. Locust 7846.

FACTORIES:

Baltimore, Md., Cincinnati, Ohio, New Philadelphia, Ohio.
Palmyra, Ohio (2), Uhrichsville, Ohio (2).

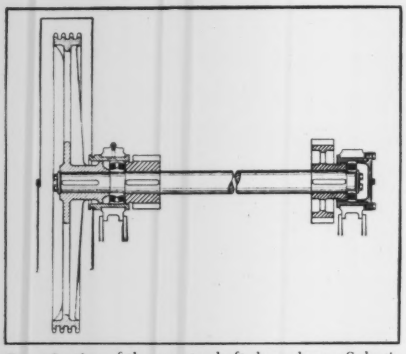
UNIVERSAL
US CONCRETE

UNIVERSAL SEWER PIPE CORPORATION
UNITED STATES CONCRETE PIPE COMPANY

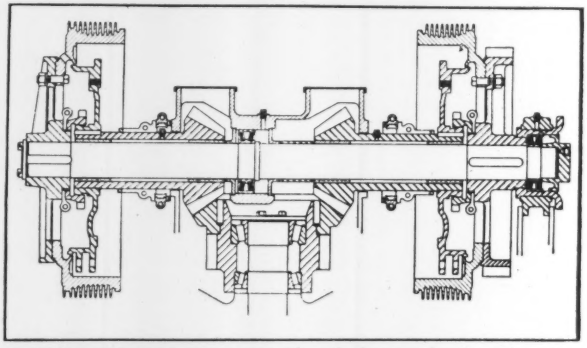
GENERAL OFFICES • 1500 Union Commerce Building • CLEVELAND 14, OHIO

Torrington Spherical Roller Bearings handle severe shock loads in Koehring power shovels

Power Shovels made by Koehring Company, Milwaukee, are built to withstand the severe shocks and strains encountered in this rugged service. Among many advanced engineering features is the use of Torrington Spherical Roller Bearings on the swing and traction shaft and the countershaft. They compensate for deflection and prevent binding under shock loads.



Cross-Section of the countershaft shows how a Spherical Roller Bearing is used to maintain free-rolling alignment despite the overhung sheave and sudden stresses of operation. These heavy-duty bearings carry high loads with an ample margin of safety.



Two Spherical Roller Bearings are used on the horizontal swing and traction shaft. Here, too, the self-aligning feature is important, insuring accurate alignment of bearings spaced some distance apart. Because they carry thrust loads in either direction, these bearings also locate the shaft axially, preventing play and helping to minimize wear on bevel gears.

To power shovels, vibrating screens, hammer mills, rock crushers and other heavy-duty equipment, Torrington Spherical Roller Bearings bring operating advantages. Our engineers will gladly help you in adapting them to the machinery you make or use. Write us today. THE TORRINGTON COMPANY, South Bend 21, Ind., or Torrington, Conn. District offices and distributors in principal cities of United States and Canada.

TORRINGTON SPHERICAL ROLLER **BEARINGS**

Spherical Roller • Tapered Roller • Straight Roller

Needle • Ball • Needle Rollers

Elections and Activities

Building Congress of Indiana, Inc., just organized, succeeds the Indiana Construction Industry Policy Committee and includes 21 business and professional groups. William L. Moore, manager of the construction material department of W. J. Holliday & Co., Indianapolis, was elected president.

John H. Bliss, of Santa Fe, N. M., New Mexico state engineer has been elected president of the Association of Western State Engineers. He succeeds J. J. Walsh of Bismarck, North Dakota state engineer. Clarence Burch, Oklahoma City, Okla., was elected vice-president.

George R. King has been elected president of the Engineering Society of Buffalo, N. Y.

MAJOR MEETINGS

American Shore and Beach Preservation Association, Hotel Astor, New York City, Oct. 10-11.

American Society of Planning Officials, Hotel Statler, Cleveland, Ohio, Oct. 10-12.

American Society for Testing Materials—First Pacific Area National Meeting, Fairmont Hotel, San Francisco, Calif., Oct. 10-14.

Federation of Sewage Works Associations, Hotel Statler, Boston, Mass., Oct. 17-20.

Metal Congress and Exhibition, also American Welding Society, Public Auditorium, Cleveland, Ohio, Oct. 17-21.

American Public Health Association, Hotel Statler and Hotel New Yorker, New York City, Oct. 24-28.

37th National Safety Congress, Stevens Hotel, Chicago, Oct. 24-28.

National Conference on Industrial Hydraulics, Sheraton Hotel, Chicago, Ill., Oct. 26-27.

Engineers Council for Professional Development, Edgewater Beach Hotel, Chicago, Oct. 28-29.

American Institute of Steel Construction, Greenbrier Hotel, White Sulphur Springs, W. Va., Oct. 31-Nov. 3.

National Reclamation Association, Hotel Newhouse, Salt Lake City, Utah, Nov. 2-4.

American Society of Civil Engineers, fall meeting, Hotel Statler, Washington, D. C., Nov. 2-4.

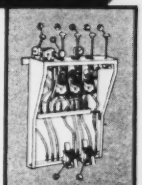
National Council of State Boards of Engineering Examiners, Sheraton Plaza Hotel, Daytona Beach, Fla., Nov. 10-12.

National Association of Housing Officials, Hotel Statler, Boston, Mass., Nov. 13-16.

10
REASONS WHY OPERATORS PREFER THE
OSGOOD
AIR CUSHION CLUTCH
with
AIR CONTROL

1. Smoother operation, no jerking, no grabbing.
2. Instant, accurate control of swing, hoist and travel.
3. Easy to operate. Simple, centralized control bank.
4. Sensitive control; operator retains "feel" of load.
5. No adjustments; automatic compensation for clutch lining wear.
6. Unaffected by temperature changes.
7. No burning up of clutch; air-cooled.
8. Speeds production; greater output with less effort.
9. Freedom from frequent repairs and maintenance.
10. Less wear and tear on both operator and machine.

Nerve Center of OSGOOD Air Control



A—Activates swing and traveling motions; also swing brake.
B—Controls crowd and retract motions.
C—Governs hoisting drum.
D, E—Operate steering clutches and brakes; each tread is independently controlled.
F—Activates easy, positive dipper trip.
G, H—Operates brakes on hoist drums.
Control levers are equipped with air-metering valves for smoother, more accurate control.

OSGOOD Air Control with Air-Cushion Clutch is only one of the many reasons why OSGOOD Power Shovels outperform any others on the market. For your own good—check with General and Osgood. Write today for complete information.

POWER SHOVELS • CRANES • DRAGLINES • CLAMSHELLS • BACKHOES • PILE DRIVERS

THE OSGOOD CO. O-G THE GENERAL CO.
EXCAVATOR
MARION OHIO

DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

"Gunite" Florida Service, Inc.
air-applied concrete specialists
4063 Ponce de Leon Blvd. Coral Gables, Fla.
Anywhere in the U.S.A. and Latin America.

- Repair all types Disintegrated Concrete
- Dam Reconstruction and repairs
- Linings and repairs for Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

All work under the supervision of Harvey M. and Victor S. Anderson, using the latest equipment, part of which is pictured below.
Write for our new illustrated brochure

EDUCATION and RESEARCH

RPI's 125th Anniversary

On Oct. 13, 14 and 15 Rensselaer Polytechnic Institute at Troy, N. Y., will celebrate the 125th anniversary of its founding. It is expected that 5,000 or more will attend the event, including several hundred industrial leaders. Well known speakers will deal with topics of broad public interest, and there will be many technical discussions, the general theme being "Industry and the Engineer of the Future."

Rensselaer Polytechnic Institute was founded in 1824 through the generosity of Stephen Van Rensselaer and was dedicated in his words to teaching the "application of science to the common purposes of life." The first enduring college of engineering to be established in the English-speaking world, Rensselaer today has 4,200 undergraduates and a faculty of 411. Degrees are granted in seven fields of engineering, three of science and in architecture.

"The need for close collaboration between American industry and the colleges of engineering will be stressed in our anniversary program," President Livingston W. Houston said, "because forward-looking leaders of our economy are agreed it is one of the vital necessities of our time.

Air Pollution Control

A national symposium on air pollution will be held in Pasadena, Calif., Nov. 10 and 11 under the sponsorship of the Stanford Research Institute in cooperation with California Institute of Technology, University of California and University of Southern California.

Subjects to be discussed will include reduction or elimination of air pollution at its sources, its influence on industrial planning and plant location, its meteorological aspects, effect on visibility, and methods of sampling and analysis.

Hydraulic Model

Engineers at the University of British Columbia have been building a three-acre working hydraulic model of the entire tidal system of the Fraser River. It is 400 by 300 ft. on a scale of one foot to 600 ft. and a vertical scale of one foot to 70 ft. Complete with a huge tidal basin in which to reproduce all the many currents and sand waves to which the river is subject, the model includes the upper limit of tidal influence at Sumas and also Pitt Lake.

The chief purpose of the model, which will not be finished until this time next year, is for study of the problems of channel regulation in the Fraser and to improve navigation.

"The main problem will first be to make the model behave as the river does," said Prof. E. S. Pretious of the civil engineering department. "Once we do that, we can experiment with confidence." When the immense model has been "verified" in this way, the various proposals for "training" the river to flush and dredge itself can be tried in miniature.

The project was asked for by Canada's Department of Public Works which has the task of keeping the Fraser open for navigation. The experiment was handed over to the National Research Council of Canada, with which the University of British Columbia is cooperating.

The engineers on the project are very careful to explain that the first object of the model is to aid navigation on the Fraser. "It has nothing to do with flood control," they say. "We want to train the river by a system of jetties, dikes and groins set in such a way that the river will silt up where we want it."

Faculty News

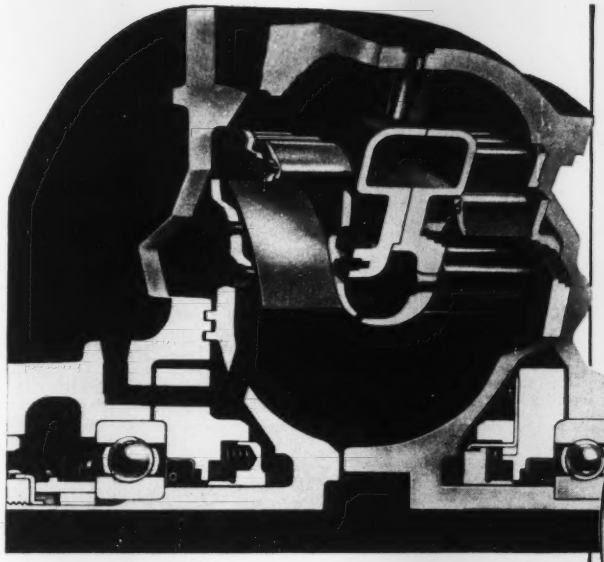
W. J. Austin, research associate in structural engineering, University of Illinois, has been made a research assistant professor in the department of civil engineering.

Henry N. Muller, Jr., manager of the educational department of the Westinghouse Electric Corp., has been named assistant to the vice-president in charge of engineering. He will continue to direct the educational department, which maintains close touch with colleges and universities, administers many Westinghouse scholarships and fellowships, and supervises recruiting and training of college men.

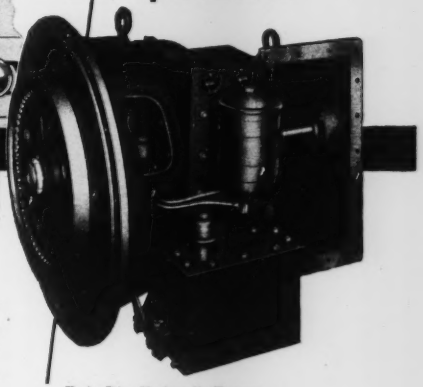
Jack E. McKee has been appointed associate professor of sanitary engineering at the California Institute of Technology. He was a partner of Camp, Dresser and McKee, Boston consulting engineers, specializing in sanitary engineering. He received his training in civil engineering at Carnegie Institute of Technology, graduating in 1936 with the highest scholastic record in the school's history. He also studied at Harvard and was affiliated with the U. S. Public Health Service and the Tennessee Valley Authority. As an engineer officer during the war, he served in the office of the Pacific Division engineer in Salt Lake City, and later in combat duty in Europe, attaining the rank of major.

SURVEYING CAMP—Prof. J. S. Dodds, right, conducts an inspection party around The Iowa State College surveying camp, Wirt, Minn., of which Dodds is director. Looking over a batter-board set up for a project in construction layout are, left to right, J. C. Schilletter, director of housing, I.S.C., Ben Schaeffer, superintendent of physical plant, I.S.C., David Dancer, secretary of Iowa State Board of Education, and B. H. Platt, business manager, I.S.C. Platt is former city manager of Wilmette, Ill. This camp, an old CCC property originally developed as a surveying camp by Iowa State, also is used by The Northwestern University department of civil engineering.

Greatest · Overall TORQUE Multiplication



Sectioned view of Twin Disc Hydraulic Torque Converter



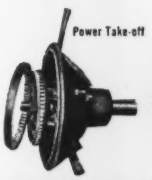
Twin Disc Hydraulic Torque Converter (Lysholm-Smith Type)

When considering power transmission units for equipment with high torque demands, designers turn naturally to Twin Disc's Lysholm-Smith Hydraulic Torque Converter, because it offers the greatest overall torque multiplication of any unit made today.

The hydraulic circuit of Twin Disc's Converter consists of a centrifugal pump discharging through a *three-stage* turbine, with two reaction stages interposed between the turbine stages. Maximum torque is developed at output shaft stall and is approximately five times engine torque . . . maximum efficiency is attained at an output speed ratio of approximately .5.

To apply a Twin Disc Torque Converter to any engine and machine assembly it is necessary to select a converter with a proper pump size to absorb engine hp over its complete operating range. The drive ratios in the machine must be properly selected to obtain maximum converter performance throughout the complete range of output shaft operating speed.

The Twin Disc Hydraulic Division offers assistance in solving your power transmission problems. Torque Converter models are currently available with horsepower ratings from 50 to 600 hp. TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division, Rockford, Illinois).



SPECIALISTS IN INDUSTRIAL CLUTCHES SINCE 1918

ABOVE—Sauerman Tautline Cableway of 2-ton load capacity spans a concrete bridge project and handles all materials of construction—forms, steel, wet concrete, etc. In picture, workmen ride in empty concrete bucket out to their place on the job.

YOU CAN SAVE

with

SAUERMAN

Long Range

MACHINES

★

Sauerman Catalogs are full of proof of important savings in time, labor and costs in material moving. Alike in principle, Sauerman Machines are made in several distinct types, each for its particular kind of work. TAUTLINE CABLEWAYS (pictured at left) for lifting and aerial conveying; SLACKLINE CABLEWAYS for excavating from pits, ponds and rivers and conveying to high point; POWER SCRAPERS for moving material from banks, pits or stockpiles; TOWER EXCAVATORS (mobile) for large scale earthwork.

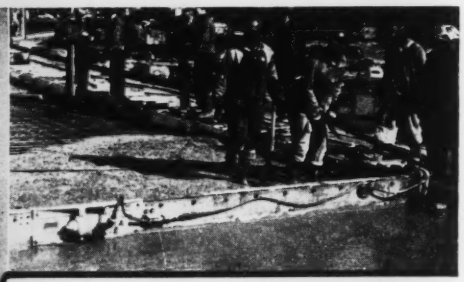
★ *Write for Catalog of Sauerman Equipment for work you are interested in and let us counsel with you on your problems.*

SAUERMAN BROS., Inc.

532 SO. CLINTON ST. CHICAGO, ILLINOIS

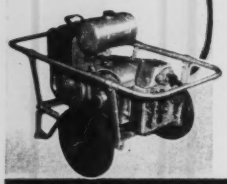
IT'S A "HUMDINGER"

FOR BRIDGE DECKS • MUNICIPAL PAVING • HIGHWAY WIDENING



JACKSON PAVING UNIT

This manually guided, electric vibratory paving machine and portable power plant, will place upward of 65 cu. yds. of stiff mix concrete per hour; will undercut at sideforms and curbs; strike off to crown (both regular and inverted); roll back for second passes. Works right up to and around sewers, manholes and other obstructions. Quickly adaptable to any slab width from 6' up to any practical width. Has strong tendency to propel itself. Operators work from front, side or rear. Power Plant generates both single and 3-phase 60 cycle AC and may also be used for lights and operating other contractor's tools. Write for complete details.



For Sale or Rent at Jackson Distributors

ELECTRIC TAMPER & EQUIPMENT CO. Ludington, Mich.

OBITUARY

Brig. Gen. Charles Keller, 81, USA retired, of Winneta, Ill., deputy chief engineer of the AEF in the first world war, died at Coronado, Calif. on Sept. 16. Recalled to active duty in 1940, he was district Army engineer in Chicago and when he retired in 1943 he was the oldest Army officer on active duty.

Charles A. LaCroix Jr., 53, construction engineer, with the Southern Cement Co., Birmingham, Ala., died Sept. 6. He was a graduate of Alabama Polytechnic Institute.

James M. Corbett, 81 Chicago contractor who with his partner, the late James E. Bidwell, built the early sewerage system in Chicago and the cribs under the lake near the Carter Harrison crib, died Sept. 7.

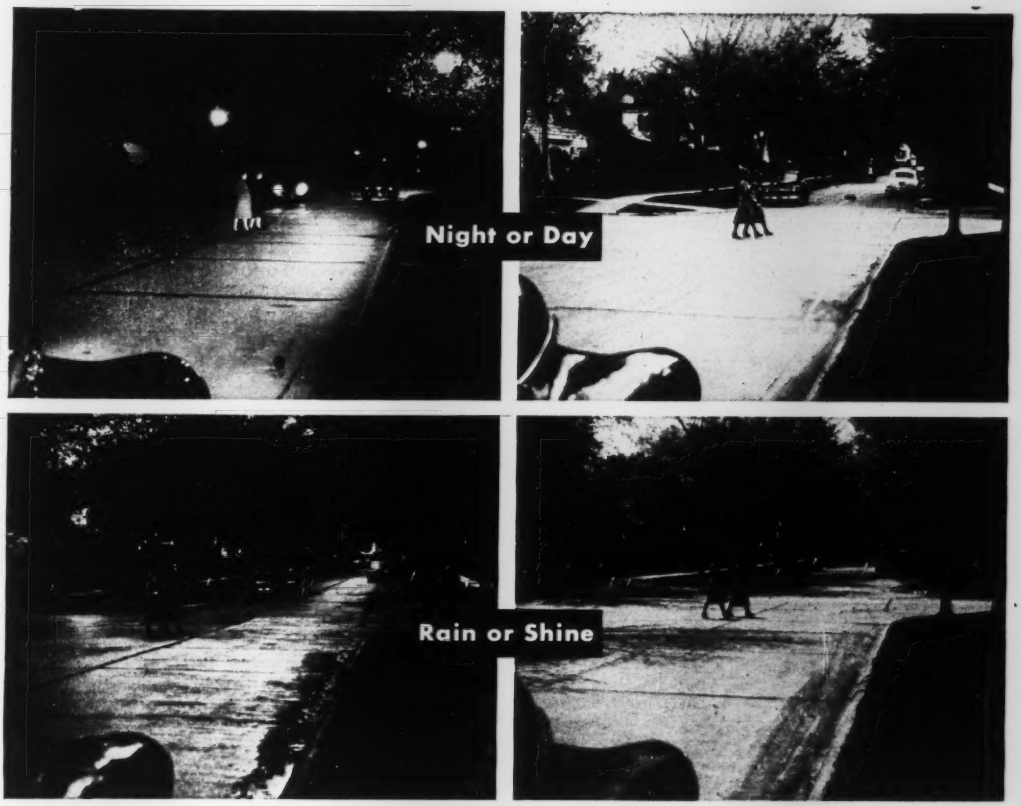
Ralph Dodd Poynter, 65, Rehoboth Beach, Del., building contractor, died Sept. 6. He built many large homes in the resort town of Rehoboth and a number of buildings at Lewes in lower Delaware. A former mayor of Rehoboth, he had been awarded many government contracts in Delaware and nearby states.

Eugene C. Mills, 75, who retired as divisional engineer of the East Bay Utilities District in 1945, died Sept. 1 in Berkeley, Calif. He had been with the water district since 1925.

Charles L. Huggins, 88, former city engineer of Berkeley, Calif., died Sept. 4 in Berkeley. Brought to California on an emigrant railroad train in 1875 after he was ransomed from Indians who had held him in captivity for a year, he was graduated from the University of California in 1884 with a civil engineering degree. Although he was Berkeley city engineer for 18 years, most of his career was spent in private practice.

Henry J. F. Waldeck, 57, chief deputy Trumbull County engineer at Warren, Ohio, died Aug. 19.

N. Raymond Porterfield, 63, vice-president and treasurer of the Porterfield-Binger Construction Co., Youngstown, Ohio, and a specialist in bridge construction, died Aug. 25. He was the engineer for many bridges in that area, and also built Newport Dam. He was a graduate of the University of Illinois and had been in business in Youngstown since 1912.



Concrete is the *SAFETY* Pavement

THERE ARE MANY reasons why traffic accidents occur, but traffic safety *begins* with the pavement. The first measure of accident prevention is to build roads and streets with concrete—the pavement with a high degree of built-in safety.

AT NIGHT light-colored concrete has the highest light reflectance of all pavements. That is a vital safety factor because the hours between dusk and dawn account for about one-half of all accidents even though only about one-fourth of the traffic occurs during that time.

RAIN OR SHINE concrete's gritty surface provides uniformly high skid resistance. That enables motorists to make quick stops with greater safety.

NIGHT OR DAY concrete is a safer pavement because of its high light reflectance and skid-resisting surface. It also is free from hazardous ruts and chuck holes that can easily cause accidents when drivers lose control of their vehicles.

These safety factors explain in part why concrete pavements attract the largest volume of traffic and carry the greatest number of heavy vehicles. But safety is only one of concrete's many advantages.

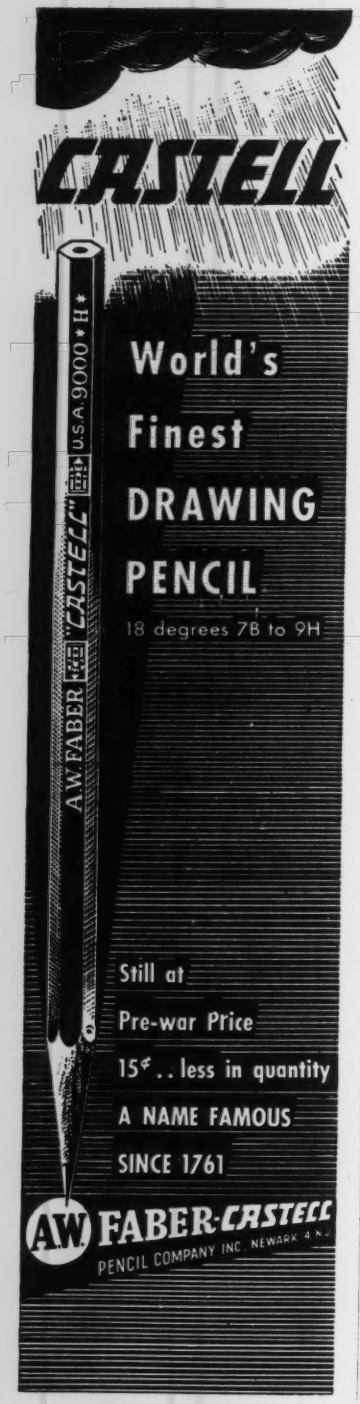
Concrete usually costs less to build than other pavements of equal load-carrying capacity. It costs far less to maintain. It lasts longer. The result is ***low-annual-cost*** pavement that pleases motorists and taxpayers alike. Concrete also cuts driving costs by saving on gas, tires and car repairs. And its high light reflectance saves on street lighting costs.

For more information about the ***low-annual-cost*** safety pavement write for the free booklet, *"Concrete for Modern Streets."* This literature is distributed only in the United States and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. A9e-17, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work



UNIT PRICES BID BY CONTRACTORS

Chesapeake Bay bridge trestle bents are bid

Maryland's State Highway Department has received and opened bids for relocation of Sandy Point ferry slip channel in Anne Arundel County and construction of the abutment and first 29 bents for Chesapeake Bay bridge. J. E. Greiner & Co. are consulting engineers for the highway department. Booth & Flinn Co. of Pittsburgh, Pa., was low of three bidders with a $495,566 proposal.

Two alternates were offered to the cast-in-place concrete pile trestle design. One permitted use of 10-in. steel H-piles; the other, 14-in. steel H-piles. However, the low bid was based on use of the 16-in. cast-in-place piles in the trestle bents.

Total length of the foundation project is 4½ miles. In addition to trestles there is a reinforced concrete abutment to be constructed under the contract. Excavation for the abutment totals 90 cu. yd., and 78,000 cu. yd. of dredging is to be done in the ferry slip channel.

There is no time stipulated for completion of the contract. Bidding on piles was broken down into furnishing, handling and driving. This will avoid any complications in case it is decided later that piles are to be furnished by the owner. Highway transportation is available from the railhead; or water transport may be used.

The contractor will have high maritime insurance rates to pay due to dangers of the uncertain weather and ice condition on Chesapeake Bay in winter. Prevailing wage rates are: $2.25 to $2.65 per hour for skilled, $1.50 to $1.95 for semi-skilled, and $1.25 minimum for common. High bid on the concrete-pile design was $579,256.

California county opens sanitary sewer tenders

Bids on 3.56 mi. of 8 to 12-in. vitrified clay sanitary sewer pipeline were opened Aug. 16 by C. E. Arnold, Los Angeles County engineer. Unit prices are available.

Low bidder on the work was Beason & Taylor of El Monte, Calif., with an $86,479 bid. Four other contractors submitted proposals, the high of which was $116,665. All five bids received exceeded the engineer's estimate of $78,400.

Included in the items of construction—all to be furnished by the contractor—are 1,920 ft. of 12-in. vitrified clay pipe, 1,870 ft. of 10-in. and 14,755 ft. of 8-in. The contract also calls for manhole and other sewer construction.

The stipulated contract time for completion of the job is 180 days. Daily wage rates to be paid are: $14.30 for skilled, $12.30 for semi-skilled and $11.90 per day for unskilled labor.

N. C. highway bridge will cost $1,137,000

A swing span bridge to cross the Neuse River in Craven County, N. C. attracted 10 bidders and got a $1,137,224 low bid. Bowers Construction Co,. Raleigh, N. C., was successful bidder.

The low proposal was more than $360,000 below the $1,500,000 engineer's estimate. And higher bids went to a top figure $313,000 over the estimate.

Eight of the 18 items included in the work were bid on the lump sum basis, but the remainder present a variety of items including concrete, steel, timber and piles.

Prevailing minimum pay per hour reported is 50¢; skilled trades make more. Materials can be brought in by highway, and all are to be supplied by the contractor.

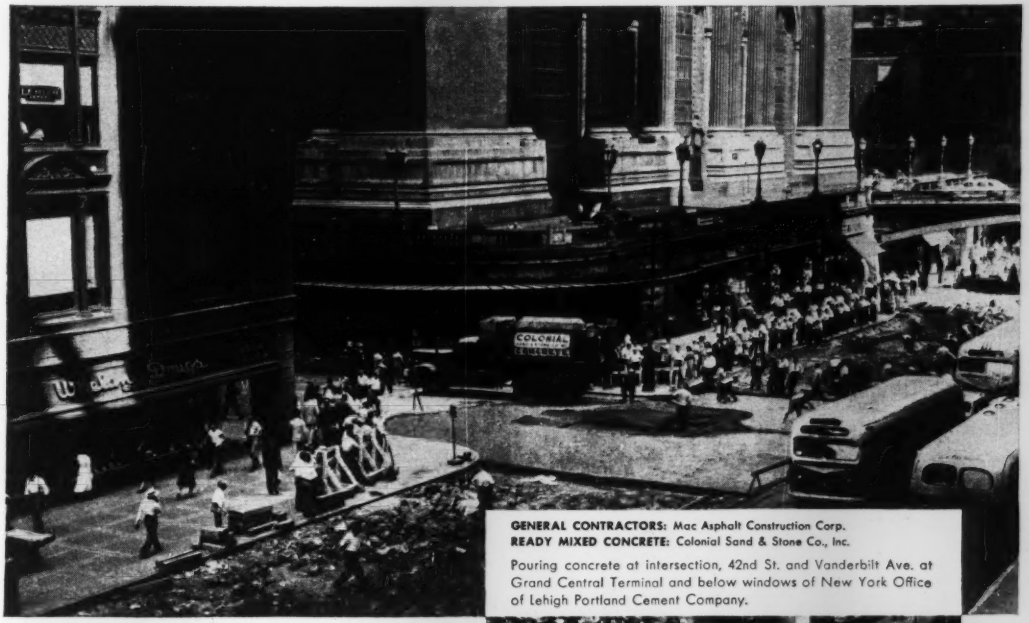
W. H. Rogers, Jr., is state highway engineer, and T. B. Gunter is engineer of bridges.

Sprinkling, planting job bid by 11 contractors

Installation of sprinkling systems and planting of 42,700 sq. yd. of roadside areas for the California State Division of Highways has been bid on by eleven contractors, all of California. The low bidder was United Sprinkler Co. of Los Angeles with a $26,246 proposal.

Galvanized steel pipe for the supply lines, assorted pipe fittings, nozzle lines, and cultivation for the planting of grass and shrubs are all included in this contract. The owner is to furnish all plants and flower seed used.

Unit price reports on jobs cited in these columns will be mailed to readers of Engineering News-Record on request at no charge. Address: Manager, Business News Dept., Engineering News-Record, 330 W. 42nd St., New York 18, N. Y. Identify by quoting headline as used herewith, and be sure to give full mailing address.



GENERAL CONTRACTORS: Mac Asphalt Construction Corp.
READY MIXED CONCRETE: Colonial Sand & Stone Co., Inc.

Pouring concrete at intersection, 42nd St. and Vanderbilt Ave. at Grand Central Terminal and below windows of New York Office of Lehigh Portland Cement Company.

Fast work on world's busiest crossroads with LEHIGH EARLY STRENGTH CEMENT

New York City is repaving its famous 42nd Street. With heavy north-south cross traffic, it has the busiest intersections in the big town. To replace these intersections with minimum inconvenience to the public, calls for good management, fast work and a dependable quick-curing concrete—concrete made with Lehigh Early Strength Cement. And with this result:

Take one busy corner—42nd and Vanderbilt—where the Grand Central Terminal swallows and disgorges a half million people daily. Between 2 and 4 one afternoon, concrete for this intersection was poured. By the next morning, it was ready for the pounding feet of the first arriving commuters. At noon it was ready for emergency vehicular traffic.

That's construction speed . . . service speed . . . Lehigh Early Strength speed. Something to remember when you have a close schedule to meet.

Whatever your cement requirements, there are Lehigh Cements to fit them. Our Service Department will be glad to help you with any specific problem.

Lehigh CEMENTS

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA. • CHICAGO, ILL. • SPOKANE, WASH.

LEHIGH PORTLAND CEMENT • LEHIGH EARLY STRENGTH CEMENT
LEHIGH AIR-ENTRAINING CEMENT • LEHIGH MORTAR CEMENT

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

October 4

Minn., Thief River Falls—City, P. G. Pederson, clk., Thief River Falls, external water plant piping, incl. 6,510 lin. ft. 16 in. c. i. watermain, 500 lin. ft. 4- to 12- in. c. i. watermain, 1,000 lin. ft. sewer, one 12 in river crossing and miscellaneous valves, manholes, etc. $28,000. Plans deposit $20. Lium & Burdick, Grand Forks, N. D., engrs.

R. I. Woonsocket—City, Woonsocket Housing Auth., 66 Morin Heights Blvd., replacing water pipe in 300 dwellings, substituting copper pipe for iron pipe, incl. underground piping, excavating, trenching and refilling, Morin Heights. $100,000. Plans deposit $10. Oliver W. Fontaine, 285 Main St., archt. CD 8/19.

About October 5

Ark., Strong—City, water distr. sys., 50,000 gal. tank on tower, etc. $90,000. Max A. Mehlburger, Pyramid Bldg., Little Rock, engr.

October 5

Tenn., Rogersville—City, WW sys. Plans deposit $25. Wallace & Clouser, Mercantile Bldg., Knoxville, engrs. CD 6/17.

Bids Asked

O., Warren—City, 12- to 20-in. watermains from Elm Rd. over Hollywood St., Laird Ave. and Youngstown Rd. to East Ave. from Laird across High St. to Pine Ave. to meet feeder main, over 2 mi., to eventually connect city water sys. with Mosquito Reservoir. CD 5/16.

LOW BIDDERS

Calif., Eureka—City, City Hall, Sept. 13, raw water reservoir, from C. M. Svar & Goodenough, Box 1431, Vallejo. **$159,844.** CD 3/11.

Calif., Half Moon Bay, Granada and Princeton—Coastside County Water Dist., Half Moon Bay, Sept. 12, water distr. mains, from Valley Trenching Co., Box 669, Turlock. **$144,579.** CD 8/31.

N. Y., Binghamton—Bureau Contracts & Accounts, Albany, Sept. 14, water supply, incl. standpipe, pumphouse, equip. at State Hospital, from M. A. Bongiovanni, Old Liverpool Rd., Syracuse. **$134,332.** CD 9/6.

CONTRACTS AWARDED

Calif., San Francisco—Pub. Utilities Comn., City Hall, Pipeline 2 Sect. C, San Joaquin River Crossing, Hetchy Hetchy Aqueduct, spec. 216, to United Concrete Pipe Corp., Box 425, Baldwin Park. **$776,762.** Bids 8/23. CD 8/30, under LB.

SEWERS, WASTE DISPOSAL

BIDS ASKED

October 6

Wis., Milwaukee—Metropolitan Sewerage Comn. of Milwaukee Co., Jones Island, Zone 1, special section concrete main sanitary sewer in Menomonee River Parkway, 2,590 ft 15 ft. standard manhole, 132 ft. drop manhole, $225,000. Plans deposit $5. J. L. Ferebee, ch. engr.

October 11

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, 4.69 mi. vitr. clay sanitary sewers in Arcadia Ave. **$143,750.** C. E. Arnold, co. engr. CD 8/25.

Bids Asked

Neb., Paxton—City, sewers, sewage plant. $77,906. Fulton & Cramer, 922 Trust Bldg., Lincoln, engrs.

LOW BIDDERS

Calif., Los Angeles—City, City Hall, Aug. 31, intercepting sewers West Los Angeles between North Outfall Sewer at Jefferson and Overland Blvd. and Farragut Dr., from Artukovitch Bros., 7320 N. Atlantic Ave., Hynes, **$210,075.**

Mo., Kirkwood (St. Louis, Zone 22 P. O.)—City, William C. Mason, clk., City Hall, 39 S. Kirkwood Rd., Kirkwood, St. Louis, Zone 22 Sept. 15, to Leflingwell Ave. Sewage Disposal Plant 1, alterations, addns., from J. E. Latta Constr. Co., 6609 Latta Pl., St. Louis, Zone 21, **$188,237.** CD 9/8.

Tex., San Antonio—City, Jimmie Knight, City Hall, Sept. 15, Sect. 3, 19,700 lin. ft. 42 in sanitary sewer main, Salado Creek and Sec. 2, 12,000 lin. ft. 54 in. sanitary sewer main, from Trueheart & Caldwell, 208-9 Insurance Bldg., **$102,350** est. $215,000 and **$89,900** est. $175,000 respectively. CD 9/6.

Wash., Vancouver—City, City Hall, Sept. 14, 19,200 ft. 8 and 10 in. sanitary sewers in L. I. D. No. 6707, from State Constr. Co., 1750 19 Ave. S., Seattle, **$100,979.** Est. $92,500. CD 9/2.

CONTRACTS AWARDED

Ill., Huntley—Village, Village Bldg., Huntley, sanitary sewerage sys., imprvs., incl. sewage treatment plant, equip., lift pumps, etc., to E. M. Scheflow, 10 Sherwin Block, Elgin, **$72,000;** sanitary sewerage sys., incl. approx. 25,000 lin. ft. 8- and 10-in. vitr. tile sewer, 126 manholes, to Arthur L. Ball, P. O. Box, 270 Libertyville. **$289,983.** Bids 8/25. CD 8/15.

Pa., Phila.,—Dpt. P. Wks., City Hall Annex, sewers, Schedule D to Eastern Asphalt Co., Packard Bldg., **$75,520***** Schedules A-2 and B-2, to Ernest Ventresca, 820 E. Haines St., **$53,494***** Schedule B-1, to Gus Mazzola, 414 N. Gross St., **$86,238.** Grand total $215,252. Bids 9/7. CD 9/1.

BRIDGES

BIDS ASKED

Ind., Fort Wayne—Comrs. Allen Co., Court House, Taylor St. Bridge, $240,000. Ormi M. and William A. Darling, 2615 West Dr., consult. engrs. CD 3/21.

LOW BIDDERS

†**Idaho**—Bureau P. Rds., General Services Admin., P. O. Box 1559, Bouse, Sept. 14, Blue Creek Bay Bridge, Kootenai Co., from Paul Jarvis, Inc., Arctic Bldg., Seattle, Wash., **$871,155.** Est. $1,500,000. CD 8/11.

●**New Jersey**—State Hy. Dpt., Trenton, Sept. 15, Sea Bright Bridge over South Branch of Shrewsbury River, between Sea Bridge and Rumson, F.A.-P. S.-U-(1), Monmouth Co., from Ole Hansen & Sons, Old Turnpike and Franklin Ave., Pleasantville, **$1,413,586.** CD 8/22.

●**New York**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Sept. 14, 24 ft. span concrete slab bridge carrying Route 22 over Little Hoosick River in hamlet of Center Berlin, incl. grading, drainage 0.18 mi. c. conc. pavement on the approaches, Rensselaer Co., from G. F. Wertime, Inc., Cohoes, **$53,777** est. $60,600*** 3 grade separation structures on previously graded sect, Ontario Thruway between Cleveland Dr. and Walden Rd., incl. 4 span, 200 ft. I-beam superstructure, George Urban Blvd., similar bridges at Marysvale Dr. and Cleveland Dr., 220 ft. and 234 ft. long respectively, incl. grading, drainage, paving 1.1 mi. approaches to the structures, Erie Co., from W. F. Hendrick Co., Inc., Sidway Bldg., Buffalo, **$786,608,** est. $977,000. CD 8/26, under Streets and Roads ***reconstruct 2 steel bridges in Bronx Boro, one carrying Melrose Ave. over tracks of Port Morris Branch of the New York Central R. R., the other carrying East 165 St. over tracks of the Harlem Electric Div. the New York Central R. R., repaving approaches, Bronx Co., from Mead & Holler Contg. Corp., New York, **$510,119,** est. $616,000. CD 8/26.

●**Pennsylvania** — State Hy. Dpt., Harrisburg, Sept. 9, one plate girder and I-beam bridge and 2 I-beam bridges, bit. surf. for temporary paving railroad crossings, construct divided hy. of rein.-con. pavement; rein.-con. paving, bit. surf., crushed aggregate base Route 289, R. 289 Parallel and R. 41006; construct c. conc. paving, bit. surf., crushed aggregate base; 2 I-beam bridges and drainage on all ramps and connecting city and boro streets off Route, total length 7,785 ft. T. R. U. S. 15 over west branch of Susquehanna River, between Williamsport and South Williamsport, Lycoming Co., from George Yang, Inc., 623 Grant Bldg., Pittsburgh, **$2,464,455.** (**Correction**—classification). CD 9/14, under Streets and Roads, LB.

Virginia—State Hy. Dpt., Richmond, Sept. 1, 188 ft. overpass over Route 350, S. P. 1400-D1, B-4, FP SN-U-FAP 87 (3) and 271 ft. overpass over Route 350, S. P. 1400-E1, B-16, FP SN-U-FAP 87 (3), both Fairfax Co., from Guy H. Lewis & Son, McLean. **$53,860** and **$132,482** respectively. CD 8/17.

CONTRACTS AWARDED

Kansas — State Hy. Dpt., Kansas City, Bridge 32-165-14.2, Sta. 236 plus 015, S. P. 32-105 F 321 (10), Wyandotte Co., to Union Constr. Co., 1401 Fairfax Trafficway, Kansas City, Kan., **$123,376.** Bids 9/2. CD 8/23, under Streets and Roads.

New Jersey—State Hy. Dpt., Trenton, elimination Erie R. R. grade crossing, Wagaraw Rd., Hawthorne, FAGM-69 (1) Off., Passaic Co., to Union Bldg. & Constr. Co., 631 Main Ave., Passaic **$521,983.** Bids 8/4, awarded 8/17. CD 8/8, under LB.

STREETS AND ROADS

BIDS ASKED

October 11

†**Colorado** — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., reconstructing State Hy. (U. S. No. 34) and completing access road to Granby Pumping Plant, Grand Co., Spec. 2795. L. N. McClellan, ch. engr.

About October 15

Neb., Geneva—City, paving streets in 4 new districts, $130,000. Fulton & Cramer, 922 Trust Bldg., Lincoln, engrs.

November 2

La., New Orleans—Louisiana Dpt. Hys., Baton Rouge, basin canal fill for Pontchartrain Expressway, incl. 1.944 mi. select fill, etc., S. P. 283-07-04, F. A. P. U 409 (1). Plans deposit $3 without cross sections, $11 with cross sections.

LOW BIDDERS

Colorado—State Hy. Dpt., Denver, Sept. 14, grading, structures, 3.299 mi. State Hys. 1 and 6, beginning at point approx. 1.2 mi. north of north corporate limits of Pueblo and extend south into Pueblo to south boundary of Mineral Palace Park, Combination Colo. Proj. F 001-3 (5), FI 002-2 (2) and UI-002-3(2), Pueblo Co., from Hutchinson Contr. Co., 4101 E. Evans Ave., Denver, **$324,132,** Est. $379,804. CD 9/8.

Colo., Denver—City and Denver Co., T. P. Campbell, mgr. Imprvts. Parks, Denver, rejected bids Aug. 31, paving district on 17 St. from Broadway to Wynkoop, removing tramway tracks and present pavement, c. conc. repaving street from curb to curb. Paving Dist. 1, L. B. **$188,682.** CD 9/8, under LB.

Iowa—State Hy. Dpt., Ames, Sept. 13, surf. 33.85 mi. S. P. FM 145, Page Co., from Missouri Valley Limestone Co., 402 R. F. Bldg., Des Moines, **$89,570;** grading 11.116 mi. FM 142, Davis Co., from Mott Contr. Co., Centerville, **$73,608.** Rejected bids Sept. 13, 0.886 mi. S. P. SN-25, Wright Co., LB, **$53,411.** CD 9/6.

Maryland—State Hy. Dpt., Baltimore, Sept. 13, grading, drainage, slag surf. 5.636 mi. beginning approx. 2.4 mi. east of Mardella Springs, extend westerly via relocation to north of Mardella Springs into U. S. Rt. 50, 1.4 mi. west of Mardella Springs, along U. S. Rt. 50 to Nanticoke River, WI 199-1-115, Wicomico Co., from Thomas A. Riley Co., Chester, Pa., slag **$79,196,** stone **$814,166.** CD 9/8.

Md., Baltimore—Mayor & City Council, City Hall, Sept. 14, c. conc. Contr. 1013, from Frank L. Carozza Constr. Co., 511 Park Ave., **$80,343***** c. conc. Contr. 1018, from Paramount Constr. Co., 761 Holabird Ave., **$94,609***** sheet asph. resurf. Contr. 1017, from National Paving & Contrg. Co., 4200 Menlo Dr., **$78,975.** CD 9/8.

Mo., Richmond Heights (St. Louis, Zone 17, P. O.)—City, A. Benoist Riley, clk., City Hall, 1330 Big Bend Rd., rejected bids Sept. 6, imprv. Elinor Ave., Hanley Rd., to Laclede see St., Salem, **$589,381.** CD 9/1.

New Jersey—State Hy. Dpt., Trenton, Sept. 15, paving 2.973 mi. Route 4 Parkway, Sects. 2E and 4D, from Port Reading R. R. to Inman Ave., Woodbridge Twp., U-188 (16), Middlesex Co., from S. J. Groves & Sons, Co., State Hy. 35, Woodbridge, **$882,098.** CD 8/29.

Continued on page 68

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $25,000; other public works $50,000; industrial buildings $68,000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	

Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

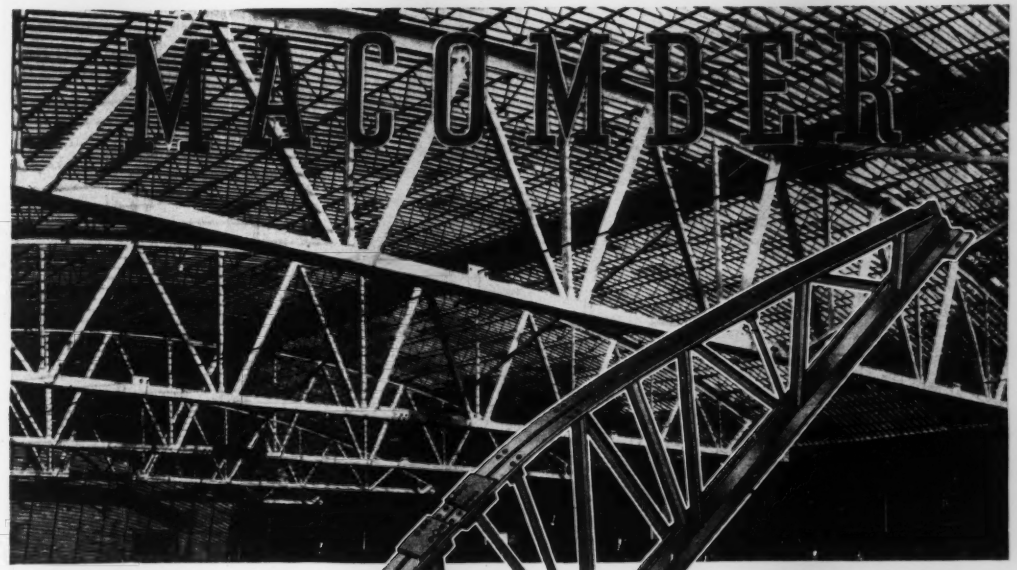
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
●	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily



STEP UP OCCUPANCY WITH THE FASTER DELIVERY OF STANDARDIZED CATALOGED TRUSSES

BOWSTRING ROOF TRUSSES

These completely standardized, all-welded steel trusses have been in universal use for the past twenty-five years. They are designed to the engineering standards of the American Institute of Steel Construction. Prompt shipment on any quantity for any span up to 180 feet.

Macomber supplies the complete steel building including columns, eave struts, trusses (or longspans), purlins and metal decking.

Investigate both delivery and prices for your next School, Gym or Field House jobs; Auditorium, Market or Theatre; Warehouse, Hangar or Industrial Building; Sales and Service Garage or Storage Building of any kind. Designed for load concentrations when required for monorails, etc. WRITE.

SEE OUR CATALOG IN SWEETS FILE

THE MACOMBER ROOF TRUSS CATALOG GIVES COMPLETE DESIGN INFORMATION.

V-BAR JOISTS AND PURLINS • V-STUDS • TRUSSES • LONGSPANS • DECKING

MACOMBER
INCORPORATED
CANTON, OHIO

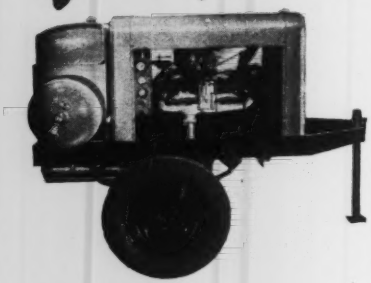
IN CANADA, SARNIA BRIDGE CO., LIMITED, SARNIA, ONT.
IN MEXICO D. F.—MACOMBER DE MEXICO S. A. CEDRO 500

STANDARDIZED STEEL BUILDING PRODUCTS

Here's the

COMPRESSOR

for you!



NEW!

. . A new SMITH Compressor with more capacity, smooth operation, economy . . long life!

Powered with a famous CHRYSLER Industrial Engine—3 cylinders for power—3 for compression. Evenly spaced power impulses. Capacity 70 cu. ft. at 80 lbs. pressure. Throttle operates about ⅓ open when operating at 150 lbs. pressure. Built for heavy duty without excess bulk and weight. Engine parts available at Chrysler, DeSoto, Dodge truck dealers.

Write for complete facts about the SMITH Model 250!

Smith **AIR COMPRESSORS**

GORDON SMITH & CO.

430 College St. Bowling Green, Ky.

●**New York**—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Sept 14, bs. conc., 0.54 mi. Route 23 A, from ¼ mi. west of its intersection with Route 32 to point 0.3 mi. east of the intersection, Greene Co., from L. S. Martin, Troy, **$64,074,** est. $80,000*** reconstruct with c. conc. 0.97 mi. Route 7, northwestward from point in village of Warrensburg, Warren Co., from M. A. Bongiovanni, Old Liverpool Rd., Syracuse, **$230,090,** est. $233,000***grading, drainage 5.91 mi. Mohawk Thruway, northeast of Syracuse, from Thompson Rd. easterly to Chittenango Creek, 50 ft. span I-beam bridge over Limestone Creek and 92 ft. span I-beam bridge over Chittenango Creek, Onondaga and Madison Counties, from Savin Constr. Corp., 10 Village St., East Hartford, Conn., **$1,313,-253,** est $2,093,000***reconstruct 1.56 mi. Routes 9 and 6 on approaches to and on Annsville Bridge north of Peekskill, incl. 2 bridges, paving, etc., Westchester Co., from A. E. Ottaviano, Inc., 80 Brook St., Croton-on-Hudson, **$718,710,** est. $1,900,000***constructing 1.81 mi. Vestal Avenue By-Pass in city of Binghampton, on new location, exten. from west city line easterly to Pennsylvania Ave., incl. 1.68 mi. twin c. conc. paved arteries, separated by mall, 0.13 mi. b. conc. paved arteries separated by a mall, Broome Co., from White Oak Excavators, Inc., Plainville, Conn., **$974,-332,** est. $1,214,000. CD 8/26.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, Sept. 16, bit. surf. crushed aggregate base, surf. 2 existing bridge floors with bit., altering existing bridge and extens. of existing rein.-con. structure 34.981 ft. L. R. 343 (2), T.R. 467, from LeRaysville Boro south to point near Stevensville, Bradford Co., from A. B. Cole, Meshoppen, **$378,198*** bit. surf. crushed aggregate base, 0.719 ft. L. R. 673 (2), T. R. 93 Columbia Co., from H. R. Miller Co., Inc., P. O. Box 1235, Lancaster, **$142,635***** rein.-con. pavement, bit. surf. crushed aggregate base, construct 2 rein.-con. bridges, bit. surf. existing pavement, 32,169 ft. L. R. 97, Sec. 6, T. R. U. S. 219 from Johnsonburg Boro north to village of Wilcox, Elk Co., from S. J. Groves & Sons Co., 53 Messenger St., Johnstown, **$996,417*** bit. surf. crushed aggregate base, incl. constructing 3 rein.-con. arches, construct rein.-con. bridge 23.695 ft. L. R. 42004 (2), 42046 (1); 97, from Lantz Corners south toward Burning Well, McLean Co., from Putman & Greens, Inc., Phillipsburg, **$661,808.** CD 8/25.

Tex., Pasadena—City, City Hall, rejected bids Sept. 7, street paving, L. B. **$109,823.** CD 9/16, under LB.

Virginia—State Hy. Dpt., Richmond, Sept. 15, macad. 3.56 mi. and 3 bridges Route 11, from 2.22 mi. east of Elliston to 1.47 mi. west of Elliston, Proj. 1600-011-02-04-05, Old SP 132-AR-1, DR-3, R-2, 3, 5, FP FI-317 (15), Montgomery Co., from Albert Bros., 1102 Tennessee St., Salem, **$589,381.** CD 9/1.

CONTRACTS AWARDED

Ala., Birmingham — Jefferson Co., Claude Rogers, co. engr., imprv. sect. Hoagtown-Collier Rd. incl. 1 bridge, to Hewitt Contr. Co., 822 12 St., Columbus, Ga., **$105,571.** Bids 9/13.

Conn., New Haven—City, P. Wks. Dpt., Hall of Records, sheet asph. paving road work, Ferry St., Congres and Columbus Aves., to C. W. Blakeslee & Sons, 58 Waverly St., New Haven, **$69,970.** 9/6/43.

Kansas—State Hy. Dpt., Chanute, grading 10.941 mi. S. P. 47-67 F 612 (1), Neosho Co., to E. W. Geiger, Leavenworth, **$100,871.** Bids 8/30. CD 8/12.

Kansas—State Hy. Dpt., Columbus, grading, c. conc. 6.332 mi. S. P. 69-11 F 403 (5) Pt. 1 and c. conc. 9.616 mi. S. P. 69-11 F 403 (6), Cherokee Co., to Perry McGlove Constr. Co., 608 Grand Ave. Bldg., Kansas City, Mo., **$59,156** and **$464,690** respectively. Bids 9/9. CD 8/31.

Kansas—State Hy. Dpt., Kansas City, base and dense graded surf. 3.486 mi. S. P. 32-52 K 1283 (1), Leavenworth Co., to Mission Equipment & Constr. Co., Mission, **$51,061;** c. conc. 0.636 mi. S. P. 32-105 F 321 (9), Wyandotte Co., to George Bennett Constr. Co., 1520 Central Ave., Kansas City, Kan., **$146,-453.** Bids 9/2. CD 8/23.

Nebraska—State Dpt., Roads & Irrigation, Lincoln, graded earth road, grading, culverts, 2 bridges, guard rail, 17.3 mi. FA-S-304, Wynot-Laurel, Cedar Co. and gravel road, grading, sand gray, culverts, one bridge and guard rail 0.4 mi. BRA-S-71, Dannebrog, Hall-Platte Valley Constr. Co., Grand Island, **$115,109** and **$65,087** respectively. CD 8/29.

Nevada—State Hy. Dpt. Carson City, 9.79 mi. highway from 1 mi. east of Fernley to Hazen Lyon and Churchill Counties to Silver State Constr. Co., S. Main St., Fallon, **$214,-970.** Bids 9/15. CD 9/8.

New Hampshire—State Hy. Dpt., Concord, surf. tr. grav. 4.346 mi. N. H. 102 in towns of Hudson, Litchfield and Londonderry, to Landers & Griffin, Inc., 800 Islington St., Portsmouth, **$157,210.** Bids 9/1, awarded 9/14. CD 9/12, under LB.

●**New Mexico**—State Hy. Dpt., Santa Fe, to Brown Const. Co., Box 1479, Albuquerque, leveling course, ballast, bit. top course surf., asph. and stone chips sealing, etc., incl. 1 multiple concrete box culvert, 1 steel, concrete railroad overpass across tracks of the Southern Pacific Ry. Co., 5.629 mi. U. S. Hy. No. 70-80, between Deming and Las Cruces, FAP No. FI-19 (3), Luna Co., **$317,004;** leveling course, ballast, bit. top course surf., asph. and stone chip sealing, etc. 6.04 mi. U. S. Hy. Route 70-80 between Deming and Las Cruces, FAP No. FI-19 (4), Dona Ana Co., **$180,394;** leveling course, ballast, bit. top course surf., asph. and stone chips sealing, etc., multiple concrete box culvert, 69.56 ft. long, 3.681 mi. U. S. Hy. 70-80 between Deming and Las Cruces, FAP No. FI-169 (3), Luna Co., **$197,362.**

To Henry Thygesen & Co., Box 876, Albuquerque, leveling course, ballast, bit. top course surf., asph. and stone chips sealing, etc. 12.372 mi. U. S. Hy. 60 between Willard and Lucy, FAP No. F-95 (3) and F-53 (9), Torrance Co., **$267,981;** ballast, leveling course, bit. top course surf., asph. and stone chips sealing, etc. 12.055 mi. U. S. Hy. 54 between Alamogordo and the Texas-New Mexico State Line, FAP No. F-106 (5), Otero Co., **$161,768;** stabil. surf. course misc. constr. 13.209 mi. Hy. Route 3 between Zuni and Grants, FAP No. S-6 (2), Valencia Co. **$118,058;** stabil. surf. course, etc. 3.526 mi. Hy. Route 32 between Gallup and Quemado, FAP No. S-115 (1), Valencia Co., **$58,983*** to J. H. Ryan, Box 513, Albuquerque, leveling course, ballast, bit. top course surf., asph. and stone chips sealing, etc., incl. 334 ft. concrete and steel railroad overpass, 315 ft. concrete steel bridge 1.514 mi. U. S. Hy. 66 between Arizona-New Mexico State Line, and Gallup, FAP No. FAGH-FGI-76 (3), and FI-76 (4), McKinley Co., **$425,578.**

To Walter L. Denison, 207 S. Hermosa St., Albuquerque, leveling course, ballast, bit. top course surf., asph. and stone chip sealing, etc., incl. 1 multiple concrete box culvert over 20 ft. clear span, 9.412 mi. U. S. Hy. Route 62-180 between Carlsbad and White City, FAP No. F-83 (5), Eddy Co., **$198,209*** to G. I. Martin, 520 S. Tulane St., Albuquerque, leveling course, bit. top course surf., asph. and stone chips sealing, etc. 20.115 mi. U. S. Route 54 between Santa Rosa and Vaughn, FAP No. F-202 (1) Guadalupe Co., **$494,029*** to Wheeler & Trotz, 2129 E. Lead Ave., Albuquerque, leveling course, ballast, bit. top course surf., asph. and stone chips sealing, etc. 17.406 mi. Hy. Route 18 between Hobbs and Eunice, FAP No. S-237 (3), Lea Co., **$339,149.** Grand total $2,761,515. Bids 9/13. CD 9/6.

New York—Dpt. P. Wks., Albany, reconstruction 5.71 mi. Old Military Turnpike, southeasterly from Irona-Ledgers Corners Rd., Clinton Co., to Dan-Bar Constr. Co. Inc., 220 Pulaski St., Syracuse, **$573,526.** Bids 8/3. CD 8/5, under LB.

●**Pennsylvania**—State Hy. Dpt., Harrisburg, rein.-con. paving 6.6 mi., incl. 4 rein.-con. structures over branch of Tulpehocken Creek; Divided highway of rein.-con., bit. surf. crushed aggregate; one I-beam bridge over Tulpehocken Creek and 2 rein.-con. bridges over branch of Tulpehocken Creek and shoulder grading, U. S. 422 from near Lebanon-Berks Co. line to point near Robesonia, Berks Co., to C. W. Good, Inc., 726 Columbia Ave., Lancaster, **$1,578,096.** Bids 9/2. CD 9/8, under LB.

Tex., Charlotte—Atascosa County Rd. Dist. 2, Courthouse, Jourdanton, 12 mi. road imprv. and asph. paving, force account, **$110,000.** CD 6/16.

Tex., Conroe—Montgomery Co., Conroe, road construction and surf. 10 mi. Owner builds, **$150,000.** CD 2-23.

Wash., Seattle — City, County-City Bldg., Zone 4, concrete sidewalks in 9 Ave. S.W. to Pacific Constr. Co., 1510 21 Ave. S., **$115,935,** Est. $120,264. Bids 9/41.

EARTHWORK, WATERWAYS

BIDS ASKED

About October 4

†**Illinois**—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis, Zone 1, Mo., repairs, alterations to gravity drainage structures, Wood River, Harrisonville and Ivy Landing, Stringtown, Ft. Chartres & Ivy Landing, Degognia and Fountain Bluff Drainage and Levee Dist., Madison, Monroe, Randolph and Jackson Counties.

October 5

†**Mississippi and Arkansas**—U. S. Eng., P. O. Box 60, Vicksburg, pile dike construction Mississippi River, Item D-538.0 R, Island 82, Arkansas, and Item D 531.5-R, Tarpley, Miss., Lot 1; pile dike construction Mississippi River, Item D-536.9-L, Miller Bend, Miss., Serial No. CIVENG-22-052-50-46.

†**South Carolina**—U. S. Eng., Customhouse, Charleston, maintenance dredging in Municipal Yacht Basin, Ashley River, Serial No. CIVENG 38-081-50-4.

October 6

Minn., Waseca—Waseca Co., A. Brisbane, aud., Waseca, Judicial Ditch 10, Waseca and Steele Counties, incl. 80,430 cu. yd. open ditch excav., 31 floodwater inlets, 5,510 ft. 12- to 18-in. tile line construction. $35,971. C. V. Jones, Albert Lea, engr.

†**Montana**—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Coram, 2 steel accordion doors for Hungry Horse Power Plant, Hungry Horse Proj., Spec. 2790. L. N. McClellan, ch. engr.

October 10

Minn., Austin—Mower Co., C. M. Hubbard, aud., Austin, Judicial Ditch 26, incl. 104,971 cu. yd. open ditch excav., 18 standard floodwater inlets, 1,021 lin. ft. 21 in tile line construction and 1 standard tile line floodwater inlet, Mower and Freeborn Counties, $28,000. C. V. Jones, Albert Lea, engr.

†**Oregon**—U. S. Eng., Pittock Block, Portland, Zone 5, cross dikes and repair Mill Creek tunnel inlet at The Dalles, Wasco Co., CIVENG-35-026-50-108.

On or About October 11

†Alabama—U. S. Eng., P.O. Box 1179, Mobile, Zone 7, repairing, resealing paved areas at Reserve Fleet Storage on Tensaw River near Hurricane, CIVENG-01-076-50-21.

October 11

†Washington—Bureau Reclamation, Coulee Dam, earthwork, Station 7 plus 20 to Station 466 plus 40.57, Potholes East Canal Columbia Basin Proj., 5 to 11 mi. north of Otello, Spec. 2787. L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

†West Virginia—U. S. Eng., Huntington, 18, W. Va., sealing abandoned coal mine at Dam Site, Sutton Reservoir, Elk River, Serial No. CIVENG-46-022-50-28.

BIDS ASKED

●†Arizona-California-Nevada — Bureau Reclamation, Dpt. Interior, Coachella, Calif., Sept. 8, earthwork, pipelines, structures for Lateral 123.45, sublaterals and wasteway, Unit 7, reconstructing, Main Canal, Station 6516 plus 86.70 to 6517 plus 00, Coachella Valley Distr. sys., Boulder Canyon Proj., All-American Canal System, Spec. 2747, from R. V. Lloyd & Co., P. O. Box 221, Russellville, Ark., **$2,070,246.**

†Arkansas—U. S. Eng., 300 Broadway, Little Rock, cancelled bids to have been opened Sept. 16, bank protection work (U. S. Hy. 79 Bridge) Arkansas River Watershed, Arkansas River, Jefferson Co., Serial No. CIVENG-03-050-50-18. CD 9/7.

†Louisiana—U. S. Eng., foot of Prytania St., New Orleans, Sept. 8, earthwork and timber guide walls for Calcasieu Lock, Serial No. CIVENG.-16-047-50-35, from Carruth Constr. Co., Inc., P. O. Box 2191, Baton Rouge, **$331,043.** CD 8/12.

La., Donaldsonville—Ascension Parish Drainage Dist. 1, Sept. 13, approx. 1,049,300 cu. yd. channel excav., from Griffin & Dickson, Box 391, Sulphur, **$108,675.** CD 9/1.

†Nebraska—Bureau Reclamation, Dpt. Interior, Arapahoe, Sept. 9, earthwork and structures for Cambridge lateral sys., Laterals 2.3, 3.4, 5.1, 6.2, 6.3, 7.1, 8.8, and 10.6, and sublaterals, Missouri River Basin, Proj., Frenchman-Cambridge Div., Spec. 2764, from Rentlor Co., Grand Island, **$211,879.** CD 8/15.

†New Jersey—U. S. Eng., 120 Wall St., New York 5, N. Y., Sept. 15, permanent marine base, Caven Point, Jersey City, Serial No. CIVENG.-30-075-50-2, from Spearin Preston & Burrows, Inc., 50 Church St., New York 7, N. Y., **$236,580.** CD 8/22.

CONTRACTS AWARDED

●†Colorado—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., earthwork, concrete lining, tunnel and structures for Horsetooth Supply Conduit, Station 0 plus 00 to Station 53 plus 88.94, Horsetooth Feeder Canal, Station 53 plus 70.25 to Station 67 plus 52.1 and access road, Station 0 plus 00 to Station 14 plus 76.7, Larimer Co., Colorado-Big Thompson Proj., Spec. 2746, to G. L. Tarlton Contr. Co., 5505 Dale St., St. Louis, Mo., **$1,328,100.** Bids 8/19, awarded 9/9. CD 8/26, under LB.

●†North Dakota—U. S. Eng., Fort Lincoln, Box 300, furnishing del. three 88,000 hp. hydraulic turbines and governors, Garrison Dam and Reservoir, Riverdale, Eng.-32-015-49-104, Schedule 2, to Baldwin Locomotive Works, Chester Pike and Simpson St., Eddystone, **$2,665,975;** Schedule 3, to Woodward Governor Co., 5001 N. 2 St., Rockford, Ill., **$118,914.** Bids 7/28. CD 8/17, under LB.

Tex., Conroe—Montgomery County Soil Conservation Dist., Conroe, drainage, terracing, earthen tanks. Owner builds. **$123,000.** CD 2/11.

AIRPORTS AND AIRBASES

BIDS ASKED

October 5

O., Akron — AIRPORT — **Comrs.**, Summit Co. Courthouse, equip. bldg. and related work; taxiways and related work at Akron-Canton Airport. Plans deposit $10. CD 4/1/45.

LOW BIDDERS

†O., Cleveland — SHOP, etc. — National Advisory Com. for Aeronautics, Brook Park and Grayton Rd., 2 story bsmnt., brick, steel shop and accessory bldg., concrete fdn., test chamber and passage room, from Sam W. Emerson Co., 1836 Euclid Ave., **$255,880.** Est. $270,000. Burns & Roe, Inc., 223 Broadway, New York, N. Y., archt.

PUBLIC BUILDINGS

BIDS ASKED

October 4

N. Y., New York—APARTMENT—New York City Housing Auth., 63 Park Row, Zone 7, altering apartments, various locations. $490,000. Plans deposit $25. Leff & Birnbaum, 303 W. 42 St., Zone 18, archts.

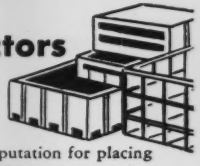
October 5

Conn., Bristol — SCHOOL — City, Mayor J. P. Casey, chn. School Bldg. Comn.; City Hall, Mary A. Callan School addn., $250,000. Extended date. Harold A. Hayden, 175 Main St., archt. CD 8/25.

Mass., Franklin — HOUSING — Town of Franklin Housing Auth., Franklin, 28 unit housing, $276,000. Plans deposit $5. H. E.

Profits for Everyone USING or MAKING Concrete with PROTEX AEA

contractors



Contractors cut costs through . . .

- **Increased workability and placeability**
- **Faster finishing with Protex because of reduced surface water, finishing immediately after placing and less troweling.**

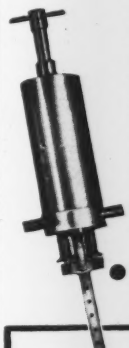
Contractors using Protex can establish a reputation for placing higher quality and better appearing concrete.

block and pipe plants

Block and pipe plants cut costs through . . .

- **Increased production**
- **Less green breakage of blocks**
- **Less breakage of pipe during stripping**
- **Increased material yield**

Provides an opportunity to increase sales by establishing a reputation for selling higher quality and better appearing blocks and pipe.



ready-mix, pre-mix, etc.

Manufacturers of concrete, such as Ready-Mix and Pre-Mix, cut costs through . . .

- **Saving in material**
- **Reduced segregation**
- **Faster discharge because of increased flowability**

Provides an opportunity to increase sales by establishing a reputation for selling higher quality and better appearing concrete.

Protex is being widely used by: U. S. Bureau of Reclamation, U. S. Corps of Engineers, Bureau of Public Roads, State and City Governments.

● **LOW COST PROTEX DISPENSER... *AUTOMATICALLY* DISPENSES PREDETERMINED AMOUNT OF AEA.**

FREE BOOK ON AIR ENTRAINMENT

AUTOLENE LUBRICANTS CO.
Industrial & Research Division, Denver 9, Colorado

Please send me your book, "Facts on Modern Placement of Concrete Through Air Entrainment."

*Name*_____

*Address*_____

Stang WELLPOINT SYSTEM

For KNOW-HOW • ENGINEERING • SUPERVISION • EQUIPMENT • to keep jobs DRY

The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

JOHN W. STANG CORPORATION

2 Broadway, New York 4, N. Y. — 2123 S. 56th St., Omaha, Nebr. — 8221 Atlantic Ave., P.O. Box 631, Bell, Cal.

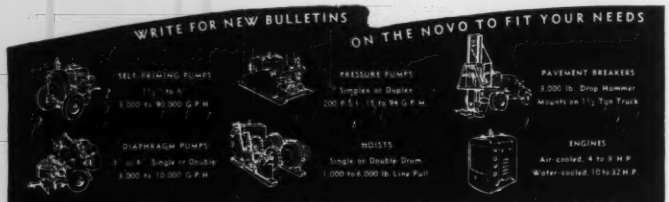
NOVO QUALITY EQUIPMENT FOR FIFTY-NINE YEARS

RUGGED -- DEPENDABLE
ENGINES
FOR HEAVY-DUTY LOADS

- FUELS — Gasoline; Kerosene; Gas-Gasoline
- ROLLER BEARINGS — On Crankshaft and Camshaft
- HEAVY FLYWHEEL — Smooths Varying Loads
- EASY SERVICING — 80% Interchangeability of Parts

This 2 cylinder water-cooled engine (Model CWR-66) develops 10 to 15 H.P. at speeds of 1200 to 2200 R.P.M. Other models available: Air-cooled, 4 to 7 or 5 to 8 H.P.; Water-cooled, 10 to 15 or 22 to 32 H.P. Let us know your specific needs.

WRITE FOR NEW BULLETINS ON THE NOVO TO FIT YOUR NEEDS



NOVO ENGINE COMPANY, LANSING, MICH.

MOTT Diamond Core Drilling Contractors

FOUNDATION TESTING
for
Bridges, Dams, Heavy Structures
PRESSURE GROUTING

MFR'S DIAMOND & SHOT CORE DRILLS, GROUT MIXING MACHINES, PACKERS AND GROUT PUMPS

MOTT CORE DRILLING CO.
HUNTINGTON, W. VA.

The BELMONT IRON WORKS

Engineers — Fabricators — Erectors
Contractors — Exporters
Cable address—Beliron

STRUCTURAL STEEL
BUILDINGS & BRIDGES
RIVETED — ARC WELDED
Shops — Eddystone

PHILADELPHIA
Main Office
Philadelphia
48, Pa.

ROYERSFORD
New York Office
44 Whitehall St.,
N. Y. 4, N. Y.

VACUUM CONCRETE

FOR SEWER INVERTS

LESS SHRINKAGE
LOW ABSORPTION
ABRASION-RESISTANT

Write for further information

VACUUM CONCRETE INC. 4210 SANSOM ST. PHILA. 4, PA.

Mason, 53 Merriman Ave., Leominster, archt. CD 12/15.

Mont., Red Lodge—HOSPITAL—Memorial Hospital Assn. of Red Lodge, Red Lodge, 1 story, bsmnt., T-shaped, 115x165 ft., brick, concrete hospital. $300,000. Plans deposit $25. Extended date. Cushing & Terrel, 212½ N. Broadway, Billings, archts. CD 8/1.

N. Y., Brooklyn—HOUSING IMPRVS.—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting for Albany Houses, Proj. NYS-40, in area bounded by Park Pl., Albany, St. Marks and Troy Aves. Plans deposit $25. CD 6/24/48.

N. Y., Napanoch—CELL BLOCK, etc.—Dpt. Correction, State Office Bldg., Albany, cell block and heating plant. $432,766. Plans deposit $30. Harvey Wiley Corbett, 300 Fourth Ave., New York, archt. CD 6/29/45.

Ont., Toronto—SCHOOL—C. H. R. Fuller, archt., c/o Bd. Educ., 155 College St., Toronto, concrete, stone, steel Dufferin School addn. Approx. $742,000. C. E. C. Dyson, c/o owner, engr. CD 11/22/48.

October 6

Calif., Bakersfield—SCHOOL—City School Dist., Bakersfield, school, Potomac and King Sts. $465,509. Wright, Metcalf & Parsons, Morgan Bldg., archts. CD 8/29.

B. C., Surrey—SCHOOL—Secy.-treas. Surrey School Bd., Municipal Hall, Cloverdale, 2 story, frame Junior-Senior High School. Approx. $250,000. Plans deposit $100. Gardiner & Thornton, 1449 W. Broadway, Vancouver, archts.

October 7

Nev., Carson City — OFFICE — State Div. Hys., Heroes Memorial Bldg., Carson City, 2 story bsmnt., 170x170 ft., rein.-con. brick office. $870,000. Plans deposit $25. Perry C. Means, Clay Peters Bldg., Reno, archt. CD 6/6.

October 11

Calif., Spadra — LAUNDRY — State Div. Architecture, P. Wks. Bldg., Sacramento, general work, mechanical work and electrical work, rein.-con. laundry addns. Plans deposit $25. Anson Boyd, Sacramento, state archt.

La., Hammond — SCHOOLS — Tangipahoa Parish School Bd., Amite Junior High School, Proj. A; colored school, Proj. B. Plans deposit $20 and $10 respectively. Favrot & Reed, 402 Nola Bldg., New Orleans, archts.

Tex., Brownfield—HIGH SCHOOL—Brownfield Independent School Dist., Brownfield, high school. $500,000. Wilson & Patterson, Majestic Bldg., Fort Worth, archts. CD 8/15.

Tex., Kermit — SCHOOL — Kermit Independent School Dist., Kermit, high school, $900,000. Plans deposit $25. Hughes & Olds, 158½ Cypress St., Abilene, archts. CD 3/9.

LOW BIDDERS

Ala., Fort Payne — COURTHOUSE — De Kalb Co., Fort Payne, Sept. 14, courthouse, from Wey-Leonard Constr. Co., 200 Alexander St., N. W., Atlanta, Ga., **$399,600**. Est. $500,000. CD 8/18.

Calif., Sacramento—PLANT—Sacramento-Yolo Port Dist., Courthouse, Sept. 12, rein.-con. monolithic grain elevator plant, warehouse and spur track for Deep Water Channel on east side of Lake Washington, from Barrett & Hilp, 918 Harrison St., San Francisco, **$557,813**. CD 8/23.

●**Md., Towson**—OFFICE—Comrs. Baltimore Co., Towson, Sept. 13, 2 story, brick county office, underground garage, Chesapeake and Baltimore Aves., from Joseph F. Hughes & Co., Inc., 511 N. Charles St., Baltimore, **$1,021,670**. CD 8/23.

●**Mass., Brookline**.—HOUSING — Town of Brookline Housing Auth., Town Hall, Sept. 14, 153 unit veterans housing Proj. 200-1, Chestnut and High Sts., from John Bowen Co., 129 Newbury St., Boston, **$1,396,100**. CD 8/29.

†**N. M., Alamogordo** — FAMILY QUARTERS — U. S. Eng., P. O. Box 1538, Albuquerque, Sept. 15, 65 single type 27x47 ft. frame, stucco, family quarters, Serial No. Eng-29-005-50-12, from Maxey & Leftwich, Lubbock, Tex., prefabricated type **$634,445**; from T. C. Bateson, Irwin Keasler Bldg., frame and stucco **$644,475**, masonry type **$709,150**. CD 8/23.

●†**N. M., Albuquerque** — HOSPITAL — U. S. Eng., P. O. Box 1538, Sept. 14, 81,000 sq. ft. 150-bed hospital, from Robert E. McKee, P. O. Box 651, **$1,357,000**. CD 8/9.

O., Canton—AUDITORIUM, etc.—City, A. W. Fabry, dir., City Hall, 172x302 ft. concrete floor memorial arena and auditorium, from Warren Hoffman Co. Renket Bldg., **$671,470**, P. Fleming, 1900 Euclid Ave., Cleveland, engr. on plumbing and heating. CD 11/26/48.

O., Wilmington — HOSPITAL — Clinton County Memorial Hospital Bd., Wilmington, Sept. 7, general contract 65 bed Clinton Memorial Hospital, from Sever & Williams, Washington Courthouse, **$494,400**. CD 8/30.

Tex., Houston — SCHOOL — Houston Independent School Dist., 1690 Washington St., Sept. 8, 21-room elementary and kindergarten school, Sharman and Wynne Sts., in Jefferson School area, from J. O. Jones, P. O. Box 6051, **$399,700**. Est. $350,000. CD 8/4.

Wis., Beaver Dam — SCHOOLS — Bd. Educ., Beaver Dam, Sept. 7, general contract 2 schools, from Valley Constr. Co., **Neenah, $454,700**. CD 8/23.

Wis., Madison—SCHOOL—Bd. Educ., 351 W. Wilson St., Sept. 14, general contract 2 and 3 story, bsmnt., irregular Westmoreland Grade School, from J. P. Cullen & Son, 109 S. Main St., Janesville, **$927,061.** CD 8/17.

CONTRACTS AWARDED

Conn., Fairfield — SCHOOL — Town, E. H. Staber, chn. School Bldg. Comn., brick, steel Mill Plan School, to E. & F. Constr. Co., 94 Wells St., Bridgeport, **$909,000.** Bids 9/9. CD 9/14, under LB.

Conn., Waterbury — HOUSING — City of Waterbury, Waterbury Housing Auth., 24 Warner St., 92 frame dwelling units in 11 bldgs., Proj. MR-19, Colonial Ave., to Frouge Constr. Co., 74 Goodsell St., Bridgeport, **$817,000.** Bids 9/7.

●†Md., Bethesda — CLINICAL — P. Bldgs., Admin., F. St. between 18 and 19 Sts. N. W., Wash. 25, D. C.; superstructure Clinical Center Bldg. 10, National Institute of Health Proj. 18-063, to John McShain, Inc., Lansdown Ave., Phila., Pa., **$16,814,200. FWA.** Bids 8/23, awarded 9/15. CD 8/29, under LB.

Mass., Beverly—HOUSING—City of Beverly Housing Auth., veterans housing Proj. 200-1, Sawyer Rd. and Herrick St., to F. C. Dolan & Sons, 18 Aldworth St., Jamaica Plain, **$621,000.** Bids 9/2, awarded 9/15. CD 9/14.

Mass., Cambridge—HOUSING—City of Cambridge Housing Auth., 1416 Massachusetts Ave., Cambridge, 66 unit veterans housing, Walden St., North Cambridge, to G. L. Rugo & Sons, Inc., 80 Boylston St., Boston, **$717,000.** Bids 8/3, awarded 8/12, CD 8/10, under LB.

Mass., Newton—SCHOOL—City School Dpt., City Hall, veterans memorial school, Oak Hill Park, to Tornabene Bros. Co., 372 Lankley Rd., Newton Centre, **$643,000.** Bids 8/11, awarded 9/16. CD 8/16, under LB.

N. Y., Chappaqua—SCHOOL—School Dist. 4, Town of New Castle and Mount Pleasant, Horace Greeley School, Chappaqua School, to Domenico Lo Cascio, 469 Manville Rd., Pleasantville, **$619,950.** Bids 8/25. CD 7/22.

N. Y., Moravia—SCHOOL—Bd. Educ., Central School Dist., Moravia, Junior and Senior High School, to John B. Pike & Sons, 1 Circle St., Rochester, **$529,429.** Bids 6/21. CD 6/9.

N. Y., New York—POWER PLANT—Dpt. P. Wks., Municipal Bldg., Zone 7, general contract, power plant expans., Phase B, combined steam tunnel and sea wall, Stage 2, at Welfare Island, to O'Brien Bros., Inc. & Quist Constr. Co., 233 Broadway, Zone 7, **$816,520.** Bids 8/18. CD 8/1.

●N. C., Chapel Hill—HOSPITAL—University of North Carolina, Chapel Hill, hospital alterations addns. to Medical School to J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, **$2,629,250.** Bids 9/2. CD 9/7, under LB.

Pa., Warren — WOMENS — Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract womens bldg., Units A, B and C, at Warren State Hospital, to Navarro Corp., 6219-6221 Broad St., Pittsburgh, Zone 6, **$669,000.** Bids 8/10, awarded 9/16. CD 8/15, under LB.

Pa., Williamsport—HIGH SCHOOL—Williamsport School Dist., 229 W. 3 St., Junior High School, to Lundy Constr., 1896 W. 4 St., **$688,500.** Bids 5/23. CD 9/7, under LB.

Tex., Austin—POWER PLANT—City, c/o Guiton Morgan, mgr., City Hall, main power plant structure, Contr. 13-B, to J. M. Odom, Box 774, **$509,000.** Bids 8/23. CD 9/6, under LB.

Va., Williamsburg — HOSPITAL — State of Virginia, Richmond, 2 story, brick, 100 bed patients bldg. at Eastern State Hospital, to Graham Bros., Mutual Bldg., Richmond, **$753,400.** Bids 8/17. CD 8/23, under LB.

●Wash., Seattle—TURBINES—City, County-City Bldg., Zone 4, three 140,000 hp. hydraulic turbines for Ross Dam Power Plant, to Baldwin Locomotive Wks., Hoge Bldg., Seattle, **$2,641,200.** E. R. Hoffman, city light supt.

COMMERCIAL BUILDINGS

BIDS ASKED

October 3

Conn., New Britain — HOSPITAL — New Britain Memorial Hospital, Inc., Corbin Ave. extens., brick, steel hospital addn., incl. bsmnt., Corbin Ave. Plans deposit $25. Henry F. Ludorf, 100 Pearl St., Hartford, archt.

October 5

La., New Orleans—INTERNS—Charity Hospital of Louisiana, 1532 Tulane Ave., 5 story masonry male interns bldg. Plans deposit $25. Extended date. August Perez & Assoc., Audubon Bldg., archts. CD 5/6.

October 11

●D. C., Wash.—HIGH SCHOOL—Archdiocese of Washington, 1719 Rhode Island Ave., red brick, catholic high school for boys, 3 wings, 21 classrooms, 3 laboratories, cafeteria, faculty chapel dining room, library, auditorium, gymnasium, admin. offices library, and student chapel, 4300 Harewood Rd. N.E., Approx. $1,500,000. Murphy & Locraft, 1518 P. St. N.W., archts.

SOON LETS CONTRACT

Calif., Los Angeles — HEALTH CENTER — Los Angeles Tenth Dist. Calif., Congress of Parents & Teachers, 499 California St., soon lets contract 2 story, 32,000 sq. ft. rein.-con. health center, 322 W. 21 St., $500,000. W. R. Hagedohm, 2033 W. 7 St., archt.

●Ind., Plainfield—OFFICE, etc.—R. A. Gallagher, pres. Public Service Co. of Indiana, Terminal Traction Bldg., Indianapolis, soon lets contract 2 story, L-shaped brick office, service and garage. U. S. 40, $1,500,000. Naess & Murphy, 80 E. Jackson Blvd., Chicago, archts. CD 9/6.

●Pa., Pittsburgh — NURSES HOME, etc. — Nurses Home of University of Pittsburgh, Forbes St., soon lets contract nurses home and training school, $4,000,000. Ingham, Boyd & Pratt, 1211 Empire Bldg., archts. CD 2/21.

R. I., Johnston—CHURCH—St. Rocco Roman Catholic Church, Rev. A. J. Susin, pastor, Clemence St., Cranston, soon lets contract 2 story bsmnt., 65x138 ft., brick, stone church, Atwood Ave, $400,000. Oresto Salia, 40 Fountain St., Providence, archt.

Tex., Borger—HOTEL—Board of Directors, c/o Gantrell & Co., archts., Pampa, soon lets contract hotel, $500,000. CD 9/16.

Tex., Port Arthur — MERCANTILE — Sears, Roebuck & Co., Port Arthur, soon lets contract 2 story, bsmnt., 100x350 ft. mercantile, $450,000. Geo. L. Dahl, 2101 N. St. Paul St., Dallas, archts. CD 4/18.

LOW BIDDERS

Kan., Hutchinson—HOSPITAL—Grace Hospital, Hutchinson, Sept. 7, general contract hospital addn., from L. R. Foy Constr. Co., Hutchinson, **$537,254.** CD 8/9.

N. J., Trenton — CHURCH — St. Anthony's Roman Catholic Church, 626 S. Olden Ave., rejected bids Aug. 25, church, Approx. **$500,000.** CD 8/18.

N. C., Gastonia—HOSPITAL—Gaston Memorial Hospital, Inc., R. Grady Rankin, chn. Bd. Trustees, Gastonia, Sept. 15, general contract General Hospital, from Barger Bros. Co., Mooresville, **$599,495.** CD 8/23.

S. C., Barnwell—HEADQUARTERS—Salkehatchie Electric Co-operative, Inc., R. R. Johnson, pres., Barnwell, cancelled bids to have been opened Sept. 20, headquarters bldg. Will re-advertise. J. Whitney Cunningham, Shelor Bldg., Sumter, engr.

CONTRACTS AWARDED

Ala., Montgomery — APARTMENT DEVELOPMENT — Cleveland Meadows Apartments, c/o contractor, apartment development, to Algernon Blair, Box 749, Approx. **$500,000.**

Calif., Concord — RESIDENCES — Meadow Development Co., Concord, 125 residences in Rex Manor, to Blackfield Constr. Co., Box 395, Lafayette, **$750,000.**

Calif., Los Angeles—APARTMENTS—Barrington, Inc., 16489 Wilshire Blvd., Los Angeles, 2 stucco apartments, Barrington and Beverly Center, Owner builds, **$481,536.** S. Charles Lee, 16489 Wilshire Blvd., archt.

Calif., Los Angeles — DWELLINGS — Birmingham Development Co., 16910 Sherman Way, 87 frame, stucco dwellings, Van Nuys Dist., to Arnold Constr. Co., 7057 Hazeltine Ave., **$546,800.**

Calif., Norwalk — DWELLINGS — Sydman Homes, Inc., 6305 Orange Ave., Long Beach, 81 frame, stucco dwellings Bombadier, Cyclops and Hercules Sts. Owner builds. **$491,400.** Paul Duncan, 4823 Laurel Canyon Blvd., archt.

Calif., Rosemead — DWELLINGS — Myers-Smith, Inc., 3407 San Fernando Rd., Los Angeles, 119 frame, stucco dwellings at Tract 15742, Rosemead Park, Unit I, to Myers Bros., 3407 San Fernando Rd., Los Angeles. Approx. **$600,000.** Paul Duncan, 4823 Laurel Canyon Blvd., Los Angeles, archt.

●D. C., Wash.—OFFICE—World Center Bldg. Inc., 315 H St. N. E., 8 story, concrete, stone, brick World Center Office Bldg., 918 16 St. N.W., to Robert O. Scholz Co., 1614 K St. N.W., **$1,000,000.** Awarded 9/2.

Ill., Bloomington—CHURCH—Wesley Methodist Church, Bloomington, general contract chuch, to John Felmly Co., Bloomington, **$700,000.** Bids 9/12, awarded 9/13. CD 3/30/45.

●Ill., Chicago — APARTMENT — Enger, Barnett & Hurwith, 175 W. Jackson St., Zone 4, 13 story, 221 unit concrete, brick apartment, 5801 Sheridan Rd., to Patrick Warren Constr. Co., 815 N. Kedzie St., Zone 51, **$2,100,000.** Awarded 9/6. Charles W. Nicol, 23 E. Jackson St., Zone 4, archt.

Ill., Chicago—CHURCH, etc.—St. John Baptist de la Salle Parish, Vernon and 102 Sts., Zone 28, 2 story, 105x135 ft., steel, brick, stone church and school, to Henry Pfutzenreuter & Sons, 53 W. Jackson St., Zone 4, **$700,000.** Awarded 9/7. Pirola & Ehrbach, 221 N. LaSalle St., Zone 1, archts. CD 8/4.

●Ill., Homewood — HOUSING — Consolidated Builders Co., 1651 E. 78 St., Chicago, Zone 19, 168 houses, ½ mi. east of here, own forces, **$1,700,000.** E. V. Buchsbaum, 7658 S. Constance St., Chicago, 49, archt.

Ind., Fort Wayne — HOUSING — John R. Worthman, Inc., 215 W. Leith St., 200 to 250 houses, Woodhurst Addn., south of Southwood Park, west of Fairfield Ave., Owner builds. William J. Kindler, c/o owner, archt.

Kan., Wichita — HOUSING — Battin Apartments Inc., Derby Bldg., twenty-six 7 unit apartment houses, to Builders Constr. Co., Derby Bldg., **$411,200.** George Metz, 108 S. Green St., archt.

La., Shreveport — HOUSING — Southern States Land Co., c/o W. R. Hawn, 10418 Garland Rd., Dallas, Tex., 90 low-cost houses, Owner builds. Approx. **$540,000.** CD 9/12.

SUPER-VULCAN

OPEN TYPE • DIFFERENTIAL-ACTING

PILE HAMMERS

18C, 30C, 50C and 80C

• Super-Vulcan gives users a long lifetime of efficient, trouble-free, pile driving service. It's super-rugged, super-durable, simple in design and operation . . . built to meet requirements established by experienced contractors. In its rapid, positive action it packs all the power you'll ever need on any pile driving job.

Super-Vulcan is easily adapted to all type of piles and it fits the same leads, uses the same accessories, as Warrington-Vulcan Single-Acting Pile Hammers.

Yes, it's a honey of a hard hitting hammer . . . job tested throughout the world. Write today for complete details.

Sizes 18C—30C—50C—80C meet all needs

VULCAN IRON WORKS

331 North Bell Avenue

Chicago 12 ---Illinois

Md., Baltimore — HOUSING — Alan Constr. Co., 1406 Court Sq. Bldg., eighty-seven 2 story, brick, concrete, houses, separate contracts, **$529,700.** Hal. A. Miller, 2118 Maryland Ave., archt.

Mo., O'Fallon—CONVENT—St. Mary's Institute, c/o Sister of Precious Blood, O'Fallon, general contract 3 story, bsmnt., 50x160 ft., and 40x126 ft. L-shaped rein.-con., brick convent addn., to John B. Guiman Contr. Co., 1301 S. Vandeventer Ave., St. Louis, Zone 10, Approx. **$400,000.** Bids 9/7. CD 8/15.

Mo., St. Louis—HOSPITAL—Josephine Heitkamp Memorial Hospital, Sisters of Charity of the Incarnate Word, 1640 S. Grand Blvd., Zone 4, general contract 4 story, 45x150 ft. and 50x80 ft. L-shaped brick, rein.-con., steel hospital addn., boiler room, Grand Blvd. and Lafayette Ave. to C. Hallo Contg. Co., Inc., 5000 Kemper Park, Zone 9, Approx. **$750,000.** Bids 9/9. CD 9/8.

Mont., Great Falls—HOUSING—West Base Housing Corp., Great Falls, general contract apartments, to Palmer-Witty Constr. Co., Great Falls, **$678,453.** 48-bids 8/14.

●**N. J., Paulsboro**—APARTMENT DEVELOPMENT—Paulsboro Bldg. Corp., 814 N. Broad St., Woodbury, apartment development, separate contracts, **$1,120,000.** Dante D'Anastasio, 1815 Federal St., Phila., Pa., archts.

●**N. Y., Forest Hills**—HOUSING—M. M. Sorin, c/o Erwin Gerber, archt., 1180 Raymond Blvd., Newark, N. J., apartments, Northside 64 Rd., near 110 St.; North Side 64 Rd. near Grand Central Parkway; South Side Rd. near 110 St. Owner builds. **$1,300,000.** CD 4/27.

N. Y., Merrick—HOUSING—Stuart Builders, c/o Teas & Steinbrenner, archts., Homeland Bldg., Malverne, one hundred 1 family houses, Whaleneck and Old Mill Rds. Owner builds. **$800,000.**

●**N. Y., Valley Stream**—HOUSING—Jonathan Woodner Co., 39 W. 67 St., New York, Zone 23, 442 family garden apartments, North Central Ave. Owner builds. **$1,000,000.** Siebel Prudy & Assoc., 163-18 Jamaica Ave., Jamaica, archts.

O., Bedford—HOMES—A. L. Weber, 2423 Overlook Rd., Cleveland Heights, 62 two-story bsmnt., frame homes, Best, John and Justin Sts., separate contracts. Approx. **$520,000.**

●**O., Columbus** — APARTMENT — Zieg Realty Co., 881 E. Town St., general contract 6 story 132 apartment development, to be known as Town-Washington Apartments, Town St. and Washington Ave., to George Sheaf & Co., 449 Neilston St., Approx. **$1,300,000.** CD 5/13.

O. South Euclid—HOMES—H. Woronkoff, 2185 Vernon Rd., 55 1½-story frame homes, separate contracts. Approx. **$550,000.**

●**O., Toledo**—APARTMENTS—Archie Stone & Jack Brown, 2120 Monroe St., 42 two-story garden apartments, Laskey and Jackman Rds., to H. B. Deal & Co., 1218 Olive St., St. Louis, Mo., Approx. **$9,000,000.** P. J. Bradshaw & Assoc., 1800 Olive St., St. Louis, Mo., archts.

Ore., Portland — APARTMENT — Cardinell View Corp., Terminal Sales Bldg., 8 story 58 unit rein.-con. apartment, 12 St., Cardinell Dr. and College St., to Oscar Wayman, 3125 N. W. Front St., **$500,000.** Awarded 9/12. Dougan, Helms & Caine, Terminal Sales Bldg., archts. Tidball & Pearson, Concord Bldg., engrs.

Ore., Portland — BUILDING — Lloyd Corp., 720 N.W. 12 Sts., 2 story, rein.-con. bldg., N.E. 7 and Pacific Hwy., Zone 14, Burns, Bear & McNeil, S.E. Belmont St., **$500,000.** Awarded 9/7. Burns, Bear & McNeil, 2940 S.E. Belmont St., archts. CD 9/7/45.

●**Pa., Havertown**—RESIDENCES—Merri - Hill Inc., 6802 Ludlow St., Upper Darby, residential development, Eagle Rd. and Lawrence Ave., separate contracts. Approx. **$1,000,000.** Erling Wenge, McClatchy Bldg., Phila., archt.

●**Tex., San Antonio** — DWELLINGS — Frank Robertson c/o Majestic Bldg. and L. G. Hodges, 3800 San Pedro Ave., 177 dwellings. Owner builds. Approx. **$1,239,000.** CD 9/15.

Que., Montreal — HOUSING — E. Laniel, 1815 Notre Dame W., 3 story, bsmnt., 21 suites concrete brick dwelling. Owner builds. **$680,000.** G. Jarry, 7074 Chambord St., archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

Pa., Phila.—TRUCK TERMINAL—P. Callahan, Inc., 316 Race St., truck terminal and storage bldg. $75,000. CD 5/13/48.

R. I., Providence — WAREHOUSE — Natco Products Co., 92 Narragansett Ave., 1 story, 60x200 ft., brick, cinder block warehouse, Narragansett Ave. $110,000. Samuel Lerner, 170 Westminster St., archt. CD 10/8.

Tex., Beaumont—WAREHOUSE—Sears, Roebuck & Co., Beaumont, 80,000 sq. ft. warehouse. CD 9/16.

Tex., Mineral Wells—PLANT—Brazos River Gas Co., Mineral Wells, absorption plant, $475,000. R. L. Purvin, Construction Bldg., Dallas, engr.

Tex., San Antonio—LAUNDRY, etc.—Martin Line Supply Co., 421 Roosevelt St., masonry laundry plant and storage, concrete slab fdn. $75,000. Addis Noonan Assoc., 803 American Hospital & Life Bldg., archts.

SOON LETS CONTRACT

Conn., Hartford — WAREHOUSE — General Fireproofing Co., 3§ Allyn St., soon lets contract 2 story, bsmnt., brick, steel warehouse, incl. office and showrooms, Garden St., $70,000. Willard Wilkins, 957 Asylum St., archt.

Ga., Atlanta—WAREHOUSE, etc.—Packard Motor Car Co., c/o Albert Kahn Assoc., Architects & Engineers, Inc., archt., 345 New Center Bldg., Detroit, Mich., soon lets contract warehouse and office, $500,000. CD 6/17.

Ind., Garrett — FACTORY — Hubbard Spool Co., 1622 W. Carroll St., Chicago, 12, Ill., soon lets contract steel, brick factory, $240,000. W. Fred Dolke, 189 W. Madison St., Chicago, 3, Ill., archt. CD 7/21.

N. C., Charlotte—WAREHOUSE—Wooten & Wooten, engrs. and archts., 215 Latta Arcade, soon lets contract warehouse for Dillard Paper Co., 515 W. 6 St. CD 7/8/46.

Tex., Beaumont — WAREHOUSE — Binswanger & Co. of Texas, 110 N. Main St., Houston, soon lets contract warehouse, $150,000. Stone & Pitts, 951 M & M Bldg., Houston, archts.

Utah, Salt Lake City—WAREHOUSE, etc.—National Biscuit Co., 442 S. 2nd West St., soon lets contract warehouse and office, Smedaker & McDonald, Utah Savings & Trust Bldg., archts.

†**Wash., Yakima**—DEPOT—Northwest Greyhound Lines, Yakima, soon lets contract 62x116 ft., brick bus depot, $185,000. V. W. Voorhees, 2106 30 Ave. S., Seattle, archt.

Ont., Holland Landing—PLANT—Allward & Gouinlock, archts., 57 Bloor St. W., Toronto, soon lets contract 1 story, 80x250 ft., steel, brick, concrete plant, for Office Specialty Mfg. Co Ltd., 31 Timothy St., Newmarket. Approx. $300,000.

LOW BIDDERS

Calif., San Jose—PRESS—San Jose Mercury-Herald and Evening News 211 W. Santa Clara, 2 story, 62x132 ft. press bldg., from O. E. Anderson, Box 251, **$84,358.** CD 9/13.

CONTRACTS AWARDED

Ill., Chicago—WAREHOUSE—James Lees & Sons Co., 3900 S. Major Sts., Zone 38, steel, brick warehouse, to Clearing Industrial Dist., 38 S. Dearborn St., Zone 3, **$436,000.** John C. Cromlin, 6431 S. Central St., Zone 38, archt.

Mass., West Springfield — WAREHOUSE — Forbes & Wallace, Inc., 1414 Main St., Springfield, 2 story, 160x270 ft., concrete warehouse, Heywood and Memorial Aves., to E. J. Penney Co., 220 Dwight St., Springfield. Approx. **$500,000.** Est. $68,000. Bids 8/4. CD 7/28.

Minn., St. Paul—FACTORY—Minnesota Mining & Mfg. Co., 800 Fauquier Ave., general contract 2 story, 145x565 ft. factory, Reaney Ave. between Arcade and Mendota Sts., to W. Murphy & Son, 428 New York Bldg., **$500,000.** CD 6/16.

Mo., Poplar Bluff—DIESEL GENERATING UNIT—M. & A. Co-operative, Poplar Bluff, 94x162 ft. brick, masonry power plant, to James H. Bright Contg. & Building Co., 1259 N. Kingshighway, St. Louis, **$259,534** installing electrical equipment—Hilburn Electric Co., 122 W. 8 St., Kansas City, Mo., **$205,471.** Bids 9/7. CD 8/9.

Mo., St. Louis—WAREHOUSE, etc.—M. K. Clark & Co., Inc., 2743 Olive St., Zone 3, 1 story, bsmnt., 91x160 ft. brick, rein.-con. warehouse and office, Olive and Beaumont Sts., to V. & M. Contg. Co., Inc., 4030 Chouteau Ave., Zone 10. Approx. **$100,000.** L. Price, 705 Chestnut Bldg., archt. CD 2/20.

Neb., Lincoln—GRAIN ELEVATOR—Equity Union Grain Co., Board & Trade Bldg., Kansas City, Mo., grain elevator, to Chalmers & Borton, Lincoln, Neb., **$700,000.** CD 8/12.

N. J., Eagle Point (Westville P. O.)—PLANT—The Texas Co., 205 E. 42 St., New York, N. Y., 1 story masonry bldgs., dispensing facilities, pipework, etc., Bulk Plant 75, to Mahony Bros. Constr. Co., 1500 Walnut St., Phila., Pa., **$180,000.** Bids 8/31. 8/18.

N. J., Hawthorne—PASSENGER STATION Erie R. R. Co., I. H. Schram, ch. engr., Erie R. R. Office Bldg., 12 and Coles Sts., Jersey City, passenger station, to Albert P. Schmidt Constr. Co., 61 Wycoff Ave., Midland Park. Bids 8/18. CD 7/28.

O., Marietta—PLANT—Hakelite Corp., 30 E. 42 St., New York, 17, N. Y., excavation, fdn. and underground piping for phenal plant, near here, to F. H. McGraw & Co., 51 E. 42 St., New York, 17, N. Y.

O., Toledo — FACTORY — Doehler-Jarvis Corp., Smead St., 1 story, brick, steel factory addn. to No. 2 Plant, 45,000 sq. ft. floor space, Old Dixie Dr. north of here, to G. W. Lathrop & Sons, 1510 Montcalm St. Approx. **$150,000.** Awarded 9/14. CD 1/24/45.

Pa., Bristol—PLANT — Kaiser Fleetwings, Inc., Bristol, interior alterations, plant, separate contracts. Approx. **$100,000.** Kaiser Engineers, P. O. Box 122, Bristol, engrs. CD 2/28.

Tenn., Athens—SALES and SERVICE—Russell Motor Co., 18 N. Jackson St., auto sales and service, to James S. Brown, 469 Sherwood Ave., Approx. **$75,000.**

Tex., Chesterville — REFINERY — Del Ray Petroleum Co., N. Esperson Bldg., Houston, gasoline refinery, to O. L. Olsen, 534 Esperson Bldg., **$740,000.** CD 8/16.

Tex., Corsicana—PLANT—Velvet Ice Cream Co., Corsicana, reconstructing plant, Owner builds. Approx. **$70,000.**

Tex., Marshall — PLANT — Marshall Brick Co., Marshall, reconstructing brick mfg. plant, Owner builds. **$145,000.**

Tex., San Antonio—SERVICE STATIONS—Thurman Barrett, Jr., 6109 S. Flores St., 2 standard type Texas Company Service Stations, Purchase and Hire, Approx. **$75,000.**

Wis., Milwaukee — SHED — Miller Brewing Co., 4002 W. State St., Zone 8, 3rd floor, 20x76 ft., concrete, steel, brick train shed addn., to Selzer-Ornst Co., 6222 W. State St., Wauwatosa, Zone 13, Approx. **$85,000.** L. Peterson & Assoc., 312 E. Wisconsin Ave., Zone 2, engrs.

Wis., Turtle Lake — CREAMERY — Turtle Lake Co-operative Creamery Assn., Turtle Lake, 1 story, bmsnt., 138x141 ft., steel, brick, stone tile creamery, concrete fdn. and floors, to Bladholm & Moe, Stillwater. Approx. **$567,000.** Dubek & Davidson, Landsdowne, Pa., archts and engrs.

UNCLASSIFIED

BIDS ASKED

October 3

Ontario—POWER DEVELOPMENT—Chairman, Hydro Electric Comn. of Ontario, 620 University St., Toronto, development Upper Notch Montreal River, Cobalt. Plans deposit $25.

October 4

Iowa — RURAL DISTRIBUTION LINES — Farmers Electric Co-operative, Greenfield, 221.4 mi. rural distr. lines, Proj. Iowa 73 K. & L. Adair, Adair, Guthrie, Adams, Union, Madison, Cass and Audubon Counties. Plans deposit $10. Philip L. Burns, 630 Davenport Bank Bldg., Davenport, engr. CD 7/30/48.

O., Cincinnati—TUNNELS, SWITCHGEAR HOUSE, etc.—Dpt. P. Wks., S. O. Linzell, dir., Obs. Dpts. Bldg., Columbus, tunnels and switchgear house, steam and return service lines, electrical distr. station and distr. lines and tunnels and service lines at Longview State Hospital. Fosdick & Hilmer, Union Trust Bldg., engrs.

October 5

Md., Baltimore—SWIMMING POOL—Mayor & City Council, City Hall, swimming pool and facilities, Paterson Park. Plans deposit $25. R. E. L. Williams, 410 Municipal Bldg., Baltimore, bldg. constr. engr.

New York—TOPSOIL, etc.—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting at the Edwin Markham Houses. Proj. NY 5-9, Richmond Boro.

N. Y., Brooklyn—TOPSOIL, etc.—New York City Housing Auth., 63 Park Row, New York, Zone 7, topsoil and planting at the Red Hook Houses. Proj. NY 5-1.

October 8

Tex., Corpus Christi—PARK—Nueces Co., Courthouse, Padre Island County Park, $175,000. Jac L. Gubbels, 2515 Woodridge Dr., Austin, landscape archt. J. R. Laurence, Courthouse, co. engr. CD 12/27/48.

October 13

California — LANDSCAPING — State Div. Hys., P. Wks. Bldg., Sacramento, 5.5 mi. landscaping, Grand Ave., in South San Francisco, and Broadway in Burlingame, San Mateo Co. G. T. McCoy, state hy. engr.

SOON LETS CONTRACT

North Dakota — RURAL DISTRIBUTION LINES—McKenzie Electric Co-operative, Watford City, soon lets contract, 332.1 mi. rural distr. lines, 12.5 mi. rural distr. lines and 10.5 mi. underbuilt lines, $375,000. Banister Engr. Co., 15th University Ave., St. Paul, Minn., engr. CD 3/30.

Oregon—RURAL DISTRIBUTION LINES—Blachly-Lane County Co-operative Electric Assn., Blachly, soon lets contract 50 mi. rural distr. lines, Lane Co. Wismer & Bechtel, 124 28 St., Sacramento, Calif., engrs. CD 9/16, under LB.

Texas — RURAL DISTRIBUTION LINES — Cherokee County Electric Co-operative Assn., Rusk, soon lets contract 74 mi. rural distr. lines, Smith and Cherokee Counties, $50,000. Plans deposit $10. Hal B Gieb & Assoc., 1207 Texas Bank Bldg., Dallas, engrs. CD 9/23/48.

British Columbia—RIGHT-OF-WAY CLEARING—Pacific Great Eastern Ry. Co., J. M. Stewart, ch. engr., Parliament Bldgs., Victoria, soon lets contract clearing and grading 17 mi. railway exten. Approx. $50,000. CD 4/15/47.

LOW BIDDERS

†**Arizona and Nevada**—CONDUCTOR, etc.—Bureau Reclamation, Aviola Bldg., Phoenix, Ariz., supply 161 kv conductor and overhead ground wire on Davis Dam-Hoover Dam and Davis Dam-Parker Dam 230-kv transmission lines and installing disconnecting switches and electric equip. on Davis Tap to Hoover Dam-Basic Magnesium line. Spec. 2756, from Malcolm W. Larson, 5200 Morrison Rd., Denver, Colo., **$233,466.** CD 8/8.

Calif., Los Angeles—RUNWAY LIGHTS—City, Sept. 13, high intensity runway lights, from California Electric Constr. Co., 2003 S. Olive St., Los Angeles, Alt. 3, **$46,158;** Alt. A-1, **$33,711;** Alt. A-18, **$65,966;** Alt. B-1, **$48,069.** Est Approx. $50,000. CD 8/23.

Mass., Holyoke — STEAM DISTRIBUTION SYSTEM—City, Gas & Electric Dpt., 70 Suffolk St., Sept. 14, underground steam transmission line, from Holyoke Supply Co., 210 Race St., **$137,450.** Warner-MacNeish Architectural & Engineering Service, 134 Chestnut St., Springfield, engr.

†**Mont., Fort Peck**—RECREATION BLDGS. —U. S. Engr., Fort Peck, Sept. 7, recreation bldgs., water distr. sys., appurtenant work.

Pines Recreational Area, Fort Peck Reservoir, Serial No. CIVENG 24-016-50-2, from Opheim Concrete Products, Opheim, **$50,079.** Est. $57,784. CD 8/30.

Nebraska—RURAL DISTRIBUTION LINES—Southwest Electric Membership Corp., Palisade, Sept. 14, 301.04 mi. rural distr. lines (Neb. 86-B and C, Dundy, Sect. II), Lundy, Chase, Hayes and Hitchcock Counties, from Douglas Contractors, Ltd., 234 Keeline Bldg., Omaha, **$321,062.** CD 8/31.

North Carolina — RURAL DISTRIBUTION LINES—Halifax Electric Membership Corp., Enfield, 100 mi. rural distr. lines, Martin Co., from F. D. Cline Constr. Co., Box 349, Raleigh **$124,536.** CD 9/8.

†Oklahoma — GENERATORS — U. S. Eng., P. O. Box No. 61, Tulsa, Zone 2, Sept. 8, furnishing two 17,895 kva-ac generators, Tenkiller Ferry Dam, Illinois River, CIVENG-34-066 50-x from Elliott Co., Ridgeway, Pa., **$865,379.** CD 8/2.

†Pa., Phila., — PIERS — U. S. Dpt. of Navy, Pub. Wks. Office, Phila. Naval Base, Sept. 13, repairing Pier Co. and Piers A and B, NOY 18693, from Long Constr. Co., Hampton, Va., **$73,000** and **$213,000** respectively. CD 9/1.

CONTRACTS AWARDED

Ala., Mobile—WHARF—Dpt. State Docks & Terminals, Terminal Office Bldg., Mobile, roadway, surf. and subsurf. drainage for Berths 6, 7 and 8 of Marginal Wharf, to Espy Paving & Constr. Co., 108 E. Bay St., Savannah, Ga., **$64,795.** Bids 9/14. CD 9/7.

†Oregon—TRANSFORMERS—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., design, mfg., testing, del. seven 56,500 kva single-phase three-winding power transformers, appurtenances for McNary Dam power plant, to Moloney Electric Co., 5390 Bircher St., St. Louis, Mo., **$857,800.** Bids 8/2. CD 8/9, under LB.

Tex., Cleveland—ELECTRIC DISTRIBUTION LINES—City, addnl. electric distr. lines, force account, **$70,000.** CD 5/27/48.

Tex., Houston — LIGHTING — City, M. H. Westerman, secy., 267 light unit street lighting expansion proj., Purchase and Hire. Approx **$100,000.** L. Fugate, City Hall, city engr. CD 8/12.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Los Angeles—Los Angeles Co., 501 Hall of Records, water sys. in County Water Works Dist. 2, 4- to 8-in. c.i. pipe, appurtenances, Norwalk **$140,000.** C. E. Arnold, co. engr.

Calif., Oxnard — City, voted bonds watermains, **$300,000;** fire station **$75,000.** E. O. Imus, city engr. CD 8/15.

●**Calif., San Rafael** — Marin Municipal Water Dist., 874 4 St., $4,000,000 bond election Nov. 4 WW incl. dam, **$1,600,000;** filter plant, **$400,000;** pipeline, **$650,000.** Jas. S. Peters, 874-4 St., ch. engr.

La., Sunset—Town, Town Hall, **$135,000** bond election Oct. 25, WW imprvs.

Miss., Brookhaven—City, City Hall, **$312,000** bond election Oct. 19, WW imprvs. CD 6/30/47.

N. C., Lincolnton—Town, bond election Nov. 3, water sys. **$118,000.**

N. C., Siler City—Town, Town Hall, **$170,000** bond election Oct. 4, water and sewer imprvs. CD 9/3/46.

N. C., Southern Pines—Town, C. N. Page, mayor, Southern Pines, voted bonds 18,500 ft. watermains, expansion water plant, **$275,000.** L. E. Wooten & Co., Capitol Club Bldg., Raleigh, consult. engrs. CD 8/8.

Okla., Alva—City, voted bonds, WW extens., **$130,000.** Alexander & Pollard, Terminal Bldg., Oklahoma City, consult. engrs. CD 8/18.

●**Okla., Chickasha**—City, City Hall, defeated **$1,500,000** bonds, reservoir and water supply, Alexander & Pollard, Terminal Bldg., Oklahoma City, consult. engs. CD 8/12.

Tenn., Parsons — City, extend. water sys. **$115,000.** Hart, Freeland & Roberts, 3rd Natl. Bank Bldg., Nashville, consult. engrs.

●**Tex., Anahuac** — Trinity Bay Conservation Dist. 85 and 42, Anahuac, water supply, **$1,000,000.**

Tex., Bryan—City, City Hall, voted **$200,000** bonds, water distr. lines, Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs. CD 8/12.

Tex., Falfurrias—City, voted bonds, WW imprvs., extens. **$100,000.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs. CD 8/25.

Tex., Iowa Park—City, City Hall, water purification plant, **$75,000,** 5 mi. 8 in. c.i. watermain, pumping station, **$75,000.** Ernest L. Andrews, Wichita Falls, consult. engr.

Tex., Lufkin — City, waterlines, **$185,000.**

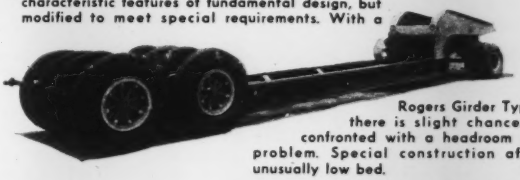
Tex., Pleasant Grove (Dallas, P. O.)—Dallas Co. Water Control & Imprvt. Dist. 3, 8122 Macon Ave., Dallas, drilling, casing, developing water supply well, rein.-con. surf. reservoir, booster pumping station, **$80,000;** 100,000 gal. steel elevated tank and tower, **$30,000.** Koch & Fowler, 713 Gr. National Bank Bldg., Dallas, consult. engrs.

Tex., Stamford—City, addnl. WW sys. imprvs., 2nd reservoir, large pipemain between reservoir and city limits, pumping unit, **$600,000.** Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult. engrs.

the answer to that problem is this

ROGERS GIRDER—TYPE TRAILER

Rogers builds trailers for unusual needs, embodying characteristic features of fundamental design, but modified to meet special requirements. With a



Rogers Girder Type Trailer there is slight chance of being confronted with a headroom clearance problem. Special construction affords an unusually low bed.

ROGERS BROTHERS CORPORATION
135 ORCHARD ST. ALBION, PA.

ROGERS TRAILERS

EXPERIENCE *builds 'em* • PERFORMANCE *sells 'em*

Export Address: 50 Church St., N. Y. 7, N. Y. Cable Address "Broscites"

WATER IS "DUCK SOUP"...

WITH COMPLETE WELLPOINTS

Don't let ground water stop you. COMPLETE'S patented, fluted-tube wellpoints won't clog . . . can de-water every type of water-laden soil wherever well-point operation is practicable . . . are the simplest and most economical de-watering equipment known to present day engineering.

Sale or rental. Call "COMPLETE" and forget your water problems.

2 to 5 stage jetting pumps available

COMPLETE MACHINERY & EQUIPMENT CO., INC.
LONG ISLAND CITY 1, N. Y.
Engineering agents throughout the U. S.

COMPLETE WELLPOINT SYSTEMS

THESE RESTORATION PROBLEMS

Were Quickly and Easily Solved By Our

PRESSURE CONCRETE METHOD!

FACTORY FACADES
GRAIN ELEVATORS
CHIMNEY STACKS
COAL BUNKERS
MINE TUNNELS
RESERVOIRS
BUILDINGS
BRIDGES
CANALS
TANKS
WALLS
DAMS

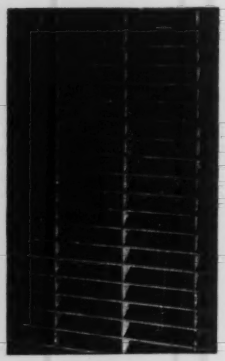
Write or wire for engineering data and estimates.

HUDSON & RUMSEY CO. INC.
1675 NIAGARA ST. BUFFALO, N. Y.

HENDRICK ALUMINUM GRATING

SAVES WEIGHT—

RESISTS CORROSION



Because it combines light weight, with ample strength and high corrosion-resistance, Hendrick Mitco Aluminum Grating is especially desirable for many purposes.

It is being successfully used in such widely different applications as ship-board installations and in sewage disposal plants.

Its light weight minimizes handling and erection costs, and maintenance painting is not required. Write for full information on this recent Hendrick development.

SEE OUR CATALOG IN SWEET'S

HENDRICK

Manufacturing Company

45 DUNDAFF STREET, CARBONDALE, PENNA.

Sales Offices In Principal Cities

Perforated Metals
Perforated Metal Screens
Architectural Grilles
Mitco Open Steel Flooring
"Shur-Site" Treads and Armorgrids

FOR WATER TUNNELS • HIGHWAY TUNNELS
SEWER TUNNELS • CAISSONS • SHAFTS

Use

COMMERCIAL LINER PLATES

COMMERCIAL Liner Plates are available in any needed shape and radii for use in any kind of ground. Get details now! Use them on that next job.

Send for Tunnel Booklet

THE COMMERCIAL SHEARING & STAMPING CO. YOUNGSTOWN 1, OHIO

Wash., Bridgeport — City, City Hall, reconstructing water sys., incl. reservoir, **$100,000.** Helmer-Hughes & Assoc., 32 Fuller-Quigg Bldg., Wenatchee, consult. engrs.

Newfoundland, Windsor—Municipality, 10 in. water line, from Codroy Pond, **$300,000.**

●**Sask., Regina**—Municipality, river intake and pumping plant, 3,000 ft. pipe, 12 mi. lined canal and improved Qu'Appelle River channel to Buffalo Pound Lake; **$800,000;** intake and pumping plant, Buffalo Pound Lake, and treatment plant, **$500,000;** 5 mi. pipeline from Lake to treatment plant **$650,000;** 34 mi. pipeline to Regina, **$3,740,000.** CD 6/23.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, 5.34 mi. 8- to 18-in. vitr. clay sanitary sewers in Ivar Ave. C. I. 1226, **$131,960;** 3.8 mi. 8 in. vitr. clay sanitary sewers in Ellis Lane, C. I. 1239, Rosemead, **$119,000.** C. E. Arnold, co. engr.

Calif., Los Angeles—Bd. Supervs., Los Angeles, 501 Hall of Records, sanitary sewers in Emperor Ave., C. I. 1235, **$107,500.** C. E. Arnold, co. engr.

Calif., Oxnard—City, voted bonds Aug. 26, industrial sewer and storm drain, **$600,000.** E. O. Imus, city engr.

Calif., Redondo Beach—City, sanitary sewer in Redondo Beach Blvd. **$750,000.** Louis H. Goss, city engr. CD 6/30/47.

Conn., Bridgeport—City, Mayor Jasper McLevy, City Hall, sewage disposal plant, addnl. facilities, sludge storage tanks, vacuum filters, incinerator, seven tide gates to prevent salt water seepage, Bostwick Avenue Plant, West End, **$800,000.** Henry L. Rowland, City Hall, city engr. H. K. Gately, 26 Berkeley Rd., Maplewood, N. J., consult. engr. CD 6/21/45.

Del., Wilmington — New Castle Co. Levy Court, 11 and Kings St., sanitary sewers, Claymont and Delaire Sect., **$55,000;** sanitary sewers, Claymont Heights, **$50,000;** sanitary sewer line, Chrisitana Hundred, **$70,000.** John I. Cahalam, ch. engr.

Minn., St. Paul—Minneapolis-St. Paul Sanitary Dist., Pigs Eye Island, St. Paul, joint Twin City Sewage Disposal Plant imprvs. and expansion, incinerator, 2 vacuum filters, etc. **$208,720.** K. Lick, c/o owner, engr.

Miss., Brookhaven—City, City Hall, **$267,000** bond election, Oct. 10, sanitary sewer imprvs.

Mo., Carrollton—City, City Hall, sanitary sewer imprvs., incl., 22,000 lin. ft. 8- to 12-in. sewers, sewage treatment plant, auxiliaries, appurtenances, **$180,000.** John C. Pritchard, 5137 Waterman Ave., St. Louis, Zone 8, Mo., engrs.

O., Dover and New Philadelphia — Cities of Dover and New Philadelphia, sewage disposal plant for both cities, **$700,000.**

●**O., Napoleon**—City, Clayton Kelley, WW dpt., sewage disposal plant, **$300,000,** storm sewers, **$500,000,** sanitary sewers to convey sewage to disposal plant **$300,000** addnl.

Okla., Pauls Valley—City, City Hall, sewage disposal plant, **$150,000.**

R. I., Providence—City, City Hall, installing sanitary sewers **$100,000.** John E. Meade, city engr.

Tex., Eagle Lake—City, voted bonds, enlarging sanitary sewerage sys., **$310,000.** CD 9/2.

Tex., Fulfurrias—City, voted bonds, sanitary sewerage sys. imprvs., extens. **$200,000.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs. CD 8/25.

Tex., Lufkin — City, sewage disposal, **$175,000;** drainage, storm sewers, **$150,000.**

Wash., Bridgeport — City, City Hall, sewerage sys. and disposal plant, **$100,000.** Helmer-Hughes & Assoc., Fuller-Quigg Bldg., Wenatchee, consult. engrs.

Wash., Sumas—City, City Hall, sewerage sys. and treatment plant, **$200,000.** Parker & Hill, Smith Tower, Seattle, Zone 4, consult. engrs.

Wash., Tacoma—City, City Hall, sewers in area between Proctor aand Mason Sts., S. Puget Sound Ave. and Mason St. **$125,475.** D. E. Morris, city, engr. CD 11/20/44.

Que., Montreal — Municipality, sewers in Carleton Ave., Jeanne Mance and Beaugrand Sts., **$214,600.** H. A. Gibeau, city engr.

BRIDGES

●**Ind., Indianapolis**—Bd. Comrs. Marion Co., Ralph Moore, aud., Court House, rein.-con. bridge over White River, near Southport, **$600,000;** rein.-con. bridge over Fall Creek, 56 St., near Millersville, **$100,000;** rein.-con. bridge over Fall Creek, Keystone Ave., near Indianapolis, **$100,000;** rein.-con. bridge over Eagle Creek, W. Vermont St., **$300,000;** rein.-con. bridge over Indian Creek, Sunnyside, near Oakland, **$100,000.** Boyd E. Phelps, 232 Franklin St. Michigan City, consult. engr. Ray Bower, c/o State Hy. Dpt., ch. engr. CD 7/20/44.

●**Mass., Boston** — City of Boston, Institutions Dpt., City Hall, viaduct from Boston to Long Island, **$2,000,000.** Crandall Eng. Co., 261 Franklin St., engr. CD 1/21/44.

●**Ohio**—State Hy. Dpt., Columbus,

Crawford Co.,—concrete bridge across Sandusky River on N. Sandusky Ave., Bucyrus, wid'n. N. Sandusky Ave. to 44 ft. from river north to city limits. **$276,000.**

Lucas Co.—North Toledo bridge linking the proposed North-South Expressway, **$7,000,000.** Howard, Needles, Tammon & Bergendorff, 921 Walnut St., Kansas City, Mo., consult. engrs.

●**Oregon-Washington** — Oregon Hy. Dpt., Salem, Ore. and Washington Hy. Dpts., Olympia, Wash.,

Wasco Co., Ore. — toll bridge across Columbia River at The Dalles, **$2,511,000.** Ralph A. Tudor, 681 Market St., San Francisco, Calif., consult. engr. R. H. Baldock, Salem, Ore., state hy. engr. W. A. Bugge, Olympia, Wash., state hy. engr. CD 7/20/45.

●**Tex., Dallas** — Dallas Co., Lew Sterrett, Judge, Courthouse, Forest Ave. Bridge and connections to Bonnie View Rd. **$1,722,000.** H. Klinger, Courthouse, engr.

●**Tex., Dallas**—Dallas Co., Lew Sterrett, judge, Courthouse, Wildwood Dr. concrete bridge and approaches on Elm Creek Fork, **$100,000;** replacing washed out bridges and strengthening others, at scattered places throughout the county, **$1,000,000;** concrete bridges, approaches entire county, new bridges and not replacements, **$1,343,250;** Denton Rd. concrete bridge, approaches over Elm Fork Creek, **$75,000;** concrete bridge, approaches in Levee Dist. in S. W. Dallas Co., **$50,000;** California Crossing Rd. Bridge, approaches over Elm Creek, **$75,000;** rein-con. bridge on Industrial Blvd. near Dal-Hil Stadium, **$50,000.**

Tex., Vanderbilt—Jackson Co. Road Dist. 18, Courthouse, Edna, rein.-con., steel vehicle bridge across Lavaca River, on road between Lolita and Vanderbilt. **$660,000.**

●**Washington** — State Hy. Dpt., W. A. Bugge, dir.,

Franklin Co. — bridge over Snake River near Pasco. **$2,000,000.**

Wash., Auburn—King Co., County-City Bldg., Seattle, Zone 4, 430 ft. decktype bridge over Green River, 3 mi. east of Auburn to replace Patton Bridge, **$125,000.** Homer Hadley, Seaboard Bldg., Seattle, Zone 1, consult engr. D. L. Evans, co. engr.

Wash., Grandview—City, City Hall, bridge over Northern Pacific Ry tracks, on 2 St. **$144,000.**

Wis., Wauwatosa—City, 3 bridges in Washington Highlands, **$100,000.** H. B. Wildschut, city engr.

Quebec—Province of Quebec, Quebec City,

Ile Bizard and Ste. Genevieve—replacement of bridge between Ile Bizard and Ste. Genevieve, across Riviere des Prairies. Approx. **$100,000.** Dpt. Rds., Quebec City, engrs.

●**Que., Hull** — City of Hull and Federal Dist. Comrs., Hull, reconstruction Chaudiere Bridge. Approx. **$1,000,000.** Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., engrs. CD 2/10/43.

STREETS AND ROADS

Colo., Denver — City and Denver Co., City & County Bldg., Lincoln St. wid'n. imprvt. dist., wid'n Lincoln St. from north curb line of Speer Blvd. to south curb line of 14 Ave. **$241,700** and from north curb line of Colfax Ave. to south curb line of 20 Ave.

Okla., Enid—City, Street Imprvt. Dists. 296 and 297. **$114,000.** V. G. Thompson, 1100 W. Main St., Oklahoma City, consult. engr.

Tex., Bryan—City, City Hall, voted **$500,000** bonds, addnl. street paving and imprvs. CD **8-12.**

●**Tex., Dallas** — Dallas Co., Lew Sterrett, judge, Courthouse, 90 mi. asphalt belt line road construction and paving, encircling the county, **$3,392,000;** imprv., surf. North Beckley Ave. from Hy. 1 to city limits, **$75,000;** Grauwyler Rd.-Elm Fork Bridge and road constr. **$204,000;** Brittian Rd. construction and surf. from Irving to Hy. 183, **$55,000;** West Dallas (County) drainage and street imprvs., **$151,050;** reconstruction and hard paving Hampton-Inwood Rd. from near Redbird Airport to Belt Line in northeast section of county, **$4,750,000;** reconstructing hard paving Dowdy Ferry Rd. from U. S. Hy. 75 to U. S. Hy. 175, **$477,000;** road surf. Valley View Lane from E. Farmers Branch to State Hy. 114, **$199,000;** road imprvs. and paving Denton Twp. Rd., Belt Line Rd. to County Line, **$120,000;** constructing, paving Beckley Ave. approach to Continental Viaduct, **$100,000;** reconstructing, asph. Old Greenville-Interurban-Skillman, Garland to Dallas City Limits Rd., **$1,369,750.** H. Klinger, Courthouse, co. engr.

●**Tex., Dallas** — Dallas Co., Lew Sterrett, Judge, Bonnie View Rd. exten., to Lancaster city line, **$75,000;** road reconstruction and asph. paving Mallory Bridge Rd. from Hy. 75 to east of Seagoville, **$431,000;** construct and pave Military Drive Rd. from Hy. 80 to Mesquite, **$1,135,250;** asph. paving, drainage Sylvan Maple Ave. to Hy. 1, **$918,000;** Westmoreland Rd. imprvs. and connecting concrete Trinity River bridges, **$132,000;** Jefferson Blvd. imprvs. and surf. from east city limits to Cockrell Hill to county line, **$318,000;** reconstructing, drainage, surf. Meyers Rd., Hy. 80 to Shady Grove Rd. **$206,000;** asph. paving S St., Forest Ave. to Corinth St. **$65,000;** constructing road from Forest Ave. to Hy. 246 **$192,000;** imprv., asph. paving Centerville-Ferguson Rd., Hy. 80 to Old U. S. Hy. 67, **$363,500;** reconstructing, asph. paving Lancaster-Hutchins Rd. **$260,000;** imprv. and asph. paving Lake June Rd., Hy. 175 to Belt Line Rd. **$340,000;** reconstructing, drainage, surf. Estell-Euless Rd., Hy. 114 to county line, **$100,000;** reconstructing, asph. paving Riverview Rd. from State Hy. 183 to Belt Line Rd. **$425,000.** H. Klinger, Courthouse, co. engr.

Tex., Eagle Lake—City, voted bonds, street imprvs., paving. **$250,000.** CD 9/6.

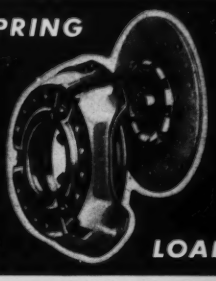
Learning Your Clutch Needs

Brawn for the Biggest ---------- with ----------

Automotive and Aircraft

Analysing the Problem

SPRING



LOADED

Trucks and Busses

Designing the Clutch

Tractors and Road Machines

Planning Production

Farm Machines and Implements

Tooling Up

ROCKFORD

Oil Field Rigs and Pumps

Manufacturing

CLUTCHES

Industrial

Checking and Testing

As original equipment in the world's larges tractor and in the truck that has been America's first choice in the over 16,000 pounds class, for 17 years, ROCKFORD CLUTCHES are serving dependably in the heaviest duty work. Other ROCKFORD CLUTCHES are serving equally well in precision machines that perform the most minutely adjusted operations. Whether your need is for maximum torque transmission or for minimum engagement shock, there is a ROCKFORD CLUTCH that is exactly suited to your specific requirements. A request from your engineering department will bring information about the ROCKFORD CLUTCH that will serve best in your product.

Mowers and Light Machines

Supervising Installation

Engines and Marine Units

Servicing

Machine Tools Production Units

B-W

ROCKFORD CLUTCH DIVISION
BORG-WARNER
313 Catherine Street Rockford, Illinois

ROCKFORD CLUTCHES POWER TAKE-OFFS

UNDERPINNING AND FOUNDATION CO

FOUNDED 1909

FOUNDATIONS

PILES - CAISSONS
UNDERPINNING
SHAFTS - TUNNELS
COFFERDAMS

No Job Too Large - None Too Small

ENGINEERS & CONTRACTORS
155 EAST 44th STREET, NEW YORK

construction
STEEL
Quick Delivery
Nearby Stocks Include:
REINFORCING BARS and accessories
STRUCTURALS—channels, angles, beams, etc.
PLATES—sheared and U. M., Inland 4-Way Floor Plate
SHEETS—many types & coatings
TUBING—incl. welded structural
EXPANDED METAL—std. & flattened
STEEL SPIRALS, CAISSON RINGS, ETC.
RYERSON
Joseph T. Ryerson & Son, Inc. Plants at: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles, San Francisco.

MATCHED TO MILLIONTHS assure the lasting accuracy and free movement of the
BRUNSON BALL-BEARING BASE*
USED ON ALL BRUNSON SURVEYING INSTRUMENTS
Permanently lubricated and factory sealed against dust, the Brunson Ball-Bearing Base allows a total eccentricity of not more than + or − ¼ second of angular error. To obtain this accuracy, it is necessary for us to engineer and produce in our own plant these Bearings and spindles—each stabilized to the accuracy of precision gauge blocks. Because these ball bearings are pre-loaded and operate under tension, they remove all grease from the point of contact. This assures greater accuracy than any other type of bearing which must allow for grease or oil film. Write for details. *Patented.
LASTING BRUNSON ACCURACY
distributed by
CHARLES BRUNING COMPANY, INC.
4745-22 Montrose Ave. • Chicago 41, Ill.

Tex., Houston — Harris Co., Court House, rein.-con. by-pass roads, area of Pasadena Tunnel, **$500,000.** Palmer & Baker, Pasadena, engrs.

Tex., Kountze — Hardin Co., c/o Kountze Road Dist., Kountze, voted bonds, hard surf. some streets in Kountze and rural roads. **$575,000.** Frank P. Payne, c/o owner, engr. CD 9/6.

Tex., Lufkin — City, street constr., imprv., paving, **$200,000.**

Tex., Refugio—Refugio Co. Road Dist. 2, Gentry Jeter, judge, Refugio, voted bonds, addnl. road constr. and asph. surf. **$125,000.** CD 8/12.

●**Ont., Toronto** — Municipality, wid'n Avenue Rd. **$1,886,757.** M. Stewart, city engr.

EARTHWORK, WATERWAYS

Wash., Rockport—Seattle City Light, City Light Bldg., Seattle, Zone 4, paving, spillways, etc. at Diablo hydroelectric dam. **$400,000.** E. R. Hoffman, city light supt.

†**Alaska** — U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, dredging small boat harbor, Cordova, **$100,000;** dredging small boat harbor, Juneau, **$30,000;** dredging Seward, **$50,000;** dredging small boat harbor and seaplane base, Valdez, **$70,000.**

AIRPORTS AND AIRBASES

●†**Tex., Camp Hood** — BUILDINGS, etc. — U. S. Eng., 606 Santa Fe Bldg., Galveston, operations bldg., **$475,000;** control tower, **$100,000;** fire crash station, **$265,500;** electric night lighting sys., **$294,120;** transformer station, **$81,270;** electric distr. and obstruction lighting system **$60,114.**

Tex., Houston—HANGAR—Pioneer Airlines, Inc., c/o Municipal Airport Offices, Houston, hangar, southeast end of field. **$125,000.**

LATIN AMERICA

Mexico, Fresnillo — National Railways of Mexico, Manuel R. Palacios, genl. mgr., Bolivar, 19, Mexico, D. F., plans passenger-freight station. **$500,000.**

Mexico, Mexico City—Hidro Electra, S. A., Torres Adalid, 607, Col. del Valle, Mexico, D. F., plans electric water boiler factory. **$300,000.**

Mexico, Santa Anita—Municipal Govt. (Lic. Fernando Casas Aleman, mayor), Palacio Municipal, Mexico, D. F., plans 4,500 dwellings. **$250,000.**

PUBLIC BUILDINGS

●**Ark., Little Rock** — HOUSING — City Planning Comn., City Hall, plans by Wittenberg, Delony & Davidson, Pyramid Bldg., 1,000 low-cost housing unit. **$1,000,000.**

Ark., Warren—HOSPITAL—Bradley County Memorial Hospital, Warren, plans by Trapp & Clippard, Pyramid Bldg., Little Rock, hospital. **$351,000.** CD 10/18.

Calif., Arcata—LIBRARY, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Weihe, Frick & Kruse, 251 Kearny St., San Francisco, library, science and classroom at Humboldt State College. **$500,000.** CD 2/28/45.

Calif., Manhattan Beach—SCHOOL BUILDINGS—Manhattan Beach Elementary School Dist., bond election Oct. 11, school buildings, **$400,000.**

Calif., Merced — HOSPITAL — Merced Co., Courthouse, plans by Charles E. Butner, 7 Winham St., Salinas, and A. MacKenzie Cantin, 704 Market St., San Francisco, 1 and part 2 story, 50 bed rein.-con. Merced County Hospital. **$850,000.** F. W. Kellberg, 320 Market St., San Francisco, consult. engr. CD 4/29/48.

●**Calif., North Sacramento** — PRINTING PLANT — State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Wurster, Bernardi & Emmons, 402 Jackson St., San Francisco, and Alfred W. Kahl, 48 2 Ave., San Mateo, state printing plant. **$2,780,000.**

●**Calif., Sacramento** — TEACHER FACILITIES—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Gordon Stafford, Forum Bldg., Herbert Goodpaster, Mitau Bldg., and Charles F. Dean, 1521 I St., teacher facilities bldg. at Sacramento State College. **$1,000,000.**

●**Calif., Sacramento** — OFFICE — State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Milton Pflueger, 580 Market St., San Francisco, headquarters office for State Dpt. Motor Vehicles. **$3,683,000.**

Calif., San Diego—SCHOOL—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by William Templeton Johnson, 1400 San Diego Trust & Savings Bank Bldg., and George C. Hatch, Box 38, Bonita, training school, San Diego State College. **$624,000.**

●**Calif., San Francisco** — SCHOOLS — Dpt. P. Wks., City Hall, plans by Mario J. Ciampi, 333 Kearny St., for Miguel School addn., **$750,000;** plans by John Lyon Reid, 109 Stevenson St., Lake Merced School **$1,000,000;** plans by Wurster, Bernardi & Emmons, 402 Jackson St., Candlestick Cove School, **$1,100,000;** plans by W. D. Peugh, 333 Montgomery St., Patrick Henry School addn., **$600,000;** plans by Lewis P. Hobart, 525 Market St., San Francisco, and Richard N. Kerr, 950 Parker St., Berkeley, replacing Bret Harte School, **$1,100,000;** plans by Milton Pflueger, 580 Market St., San Francisco City College addns., incl. auditorium, administration bldg., library, stadium and addnl. classrooms, **$2,500,000.**

●**Calif., San Francisco**—MUSIC and SPEECH, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Kump & Falk, 9 Main St., San Francisco, music and speech bldg., and library at San Francisco State College, **$1,572,300.** CD 2/21/46.

●**Conn., Hartford**—HOUSING—City of Hartford, Hartford Housing Auth., 846 Asylum St., 2000 frame dwelling units garden apartments. **$16,000,000.**

†**Conn., New Britain**—POST OFFICE—Pub. Bldgs. Admin., F St. between 18 and 19 Sts. N.W., Wash., D. C., post office extensive alterations, addns. **$700,000. F.W.A.**

●†**Conn., New Haven**—POST OFFICE, etc.—Pub. Bldgs. Admin., F St. between 18 and 19 Sts. N. W., Wash., D. C., post office and court bldg. extensive changes and extens., **$4,700,000. F. W. A.**

†**Conn., Stratford** — POST OFFICE — Pub. Bldgs. Admin., F St. between 18 and 19 Sts. N.W., Wash., D. C., post office, Stratford Branch, **$200,000. F.W.A.**

●**Fla., Jacksonville** — SCHOOLS, etc. — Duval Co. Bd. Pub. Instruction, Jacksonville, bond election Oct. 4, school in western part of city; school in Lake Shore Sect., school in Davis St. Sect.; school in Wilder Park Sect., school in Moncrief Rd. Sect.; school in Kings Rd. Sect.; school in Biltmore Subdivision, all foregoing **$181,000** each; school at Garden City, **$290,000;** school in Southside, **$379,000;** Senior High School in western part of Jacksonville, **$881,000;** school in Northeast Springfield area, **$290,000;** school in du Pont Sect., **$379,000;** school in Beach Sect. **$290,000;** high school in Darnall Cookman site, **$713,000;** high school, Kings Rd., **$728,000;** school in West Lewisville Sect., **$481,000;** school west of Beaver St. Viaduct, **$300,000;** school in Matthew W. Gilbert School Sect., **$481,000;** school to replace present Dinsmore School 45, **$290,000;** school to replace present Picketts School 44, **$290,000;** School 62, Oceanway-combination auditorium-gymnasium, cafeteria, library and 14 classroom addn., **$355,000;** School 107, Douglas Anderson Junior High-Cafeteria, auditorium, and gymnasium, combination 13 classroom addn. and equip. **$278,000.**

Ga., Americus—HOSPITAL—City and Sumter Co., Americus, plans by Charles H. McCauley, Jackson Bldg., Birmingham, hospital. **$930,000.** CD 8/9.

Ga., Dawson—HOSPITAL—Terrell Co. Hospital Auth., Dawson, plans by Dennis & Dennis, Richard V. Richard, Assoc., C. & S. National Bank Bldg., Albany, hospital. **$258,000.** CD 8/15.

Ga., Sylvania — HOSPITAL — Screven Co., Sylvania, plans by Willis Irvin, 722 Green St., Augusta, hospital. Approx. **$300,000.**

Ia., Des Moines—ADMINISTRATION—Bd. Educ., Des Moines, administration bldg. **$295,000.**

Kan., Leavenworth—SCHOOLS—Bd. Educ., Leavenworth, votel bonds one large and one small school, **$450,000.** T. W. Williamson & Co., 1202 Natl. Bank of Topeka Bldg., Topeka, archts. CD 6/16.

●**La., New Orleans**—HOUSING UNITS—New Orleans Housing Auth., 226 Carondelet St., (1st unit) 2,500 rental housing units, **$21,875,000;** (2nd unit) 2,500 rental housing units, **$21,875,000.**

Md., Baltimore—SCHOOL—Bd. Educ., Baltimore Co., Towson, plans by Tyler, Ketcham & Myers, 513 Park Ave., school, Westowne, near here. **$500,000.**

●**Mass., Brockton** — HOSPITAL — U. S. Eng., Army Base, Boston, Mass., veterans hospital, infirmary, continued treatment bldgs., recreation bldgs., theatre, gymnasium and swimming pool accommodations for attendants and utility group, Belmont, St., for Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C. **$17,000,000.** CD 5/13.

Mass., Hingham — SCHOOL — Town, A. W. Tweedy, ch. Bldg. Com., Hingham, plans by E. T. P. Walker, 131 State St., Boston, school, Crow Point area. Approx. **$250,000.** Adden-Parker-Clinch-Crimp, 177 State St., Boston, consult. engrs. CD 3/24/44.

Mass., Stoneham — SCHOOL — Town, Supt. Schools, Stoneham, plans by E. I. Leeds & Assoc., Inc., 153 Brighton Ave., Allston, high school, **$600,000;** plans by Kilham, Hopkins, Greeley, Brodie, 16 Arlington St., Boston, school, North West Sect. Approx **$250,000.**

Minn., Elbow—POWER PLANT, etc.—Village, A. W. Roettger, clk., voted **$280,000** bonds, municipal hydro electric power plant and distr. sys. **$275,000.** Hitchcock & Estabrook, 521 Sexton Bldg., Minneapolis, consult. engrs. CD 9/2.

●**N. Y., Brooklyn** — HOUSES — New York Housing Auth., 63 Park Row, New York, Zone 7, Breukelen Houses, 1,400 apartments on site bounded by Stanley Ave., Hinsdale St., Glenwood Rd., E. 105 St., Farragut Rd. and E. 107 St., **$1,000,000.**

●**N. Y., Far Rockaway**—HOUSES—New York City Housing Auth., 63 Park Row, New York, Zone 7, Redfern Houses, 450 apartments on site bounded by Redfern Ave., Hassock St., Beach Channel Dr. and Nassau Co. line, **$3,600,000.**

O., Bryan — SCHOOL — Bd. Educ., Bryan, **$950,000** bond election Nov. 8, Lincoln School addn., and 15 room school at southwest edge of city.

O., Delphos—AUDITORIUM, etc.—Bd. Educ. Delphos School Dist., Delphos, **$250,000** bond election Nov. 8, auditorium-gymnasium at Jefferson High School.

O., Mansfield—JAIL—Comrs. Richland Co. Courthouse, bond election Nov. 8, Richland County Courthouse annex and modernizing county jail. Approx. **$300,000.** CD 8/25/44.

O., Ravenna—INFIRMARY—Comrs. Portage Co., Ravenna, **$400,000** bond election Nov. 8, 1 story infirmary.

O., St. Marys — HOSPITAL — Harry Freet, acting secy. Joint Township Hospital District Bd., representing St. Marys, Noble, German and Jackson Twps., plans by Lyman T. Strong & Sons, Lima, hospital, **$500,000.** CD 11/13/46.

O., Sidney — SCHOOLS — Bd. Educ., Sidney School Dist., **$972,728** bond election Nov. 8, 3 ward schools and remodeling schools at nearby village of Port Jefferson and Maplewood. CD 11/11/48.

●**R. I., Providence** — SCHOOL — City, Dennis J. Roberts, mayor, City Hall, 2 story, bsmnt., brick, steel, concrete school, Smith Hill Sect. **$1,000,000.** CD 2/20/48

R. I., Wickford—HIGH SCHOOL—Town, School Dpt., Town Hall, plans by Howe, Prout & Ekman, 17 Custom House St., Providence, 3 story, brick high school addn. Approx. **$250,000.**

●**Tex., Austin** — HOUSING UNITS — Austin Housing Auth., 302 Chalmers St., 520 low rental housing units. **$4,550,000.**

Tex., Bonham—HOUSING—Bonham Housing Auth., Bonham, 100 unit low rental housing. (Negro). **$800,000.**

●**Tex., Brownsville** — HOUSING UNITS — Brownsville Housing Auth., Brownsville, 250 rental housing units. **$2,187,500.**

Tex., Dallas—SCHOOL—Highland Park Independent School Dist., c/o Dr. W. B. Irvin, supt., 3610 Cornell St., plans by Mark Lemmon, 1210½ Main St., Hyler School addn. **$250,000;** Junior High School addn. **$275,000.**

Tex., Eagle Pass—HOUSING—Eagle Pass Housing Auth., Eagle Pass, 50 housing units. **$125,000.** CD 9/10/47.

●**Tex., Fort Worth** — HOUSING — Fort Worth Housing Auth., 500 W. Belknap St., 500 low rental housing units. **$4,375,000.**

Tex., Houston—HEALTH CENTER—City, City Hall, 900 Brazos St., plans by Robert C. Smallwood, 3220 Louisiana St., health center. **$850,000.** CD 7/21.

●**Tex., Houston**—GYMNASIUM—University of Houston, 705 Fannin St., plans by Alfred C. Finn, Bankers Mortgage Bldg., gymnasium. **$3,000,000.**

Tex., Huntsville—SCHOOL—Huntsville, Independent School Dist., Huntsville, plans by Page, Southerland & Page 602 West Ave., high school. **$450,000.** CD 7/17/47.

Tex., Lockhart—SCHOOL—Lockhart Independent School Dist., Lockhart, plans by Page, Southerland & Page, 602 West Ave., 28 classroom school. **$368,000.** CD 9/12.

●**Tex., Wichita Falls** — HOSPITAL — City and Wichita Co., plans by Ray C. Arnold & Jesse G. Dixon, Nacol Bldg., city-county hospital. **$2,000,000.** Landauer & Guerrrero, 4801 Lemmon St., Dallas, mechanical engrs. CD 2/2/21.

Vt., Castleton—DORMITORY—State of Vermont, Purch. agt., State House, Montpelier, plans by Heacock & Platt, 152 N. 15 St., Phila., Pa., dormitory, Teachers College. **$285,000.**

Wash., Port Angeles — HOSPITAL — Clallam Co. Hospital Dist. 2, Courthouse, plans by G. C. Field, Jones Bldg., Seattle, hospital, **$616,000.** CD 11/11/48.

Wash., Poulsbo — SCHOOL — North Kitsap School Dist. 400, Poulsbo, plans by W. A. Johnson, First National Bank Bldg., Everett, school, **$260,000.**

●**Wash., Seattle**—HOUSING—Seattle Housing Auth., 825 Yesler Way, 1,201 family housing units. **$4,000,000.**

●**Wis., Appleton** — HOSPITAL — Appleton Memorial Hospital Assn., Zuelke Bldg., 100 bed hospital, **$1,500,000.**

Ont., Kitchener—LIBRARY—Library Bd., 58 Queen St., plans by L. G. Bridgman, 311 Royal Bank Bldg., London, 3 story, 74x84 ft. library addn. **$250,000.**

●**Ont., Sudbury** — SANATORIUM — Alonga Sanatorium, T. D. Edward, chn., Sudbury, sanatorium, on shore of Lake Ramsay, Approx. **$1,500,000.**

Ont., Toronto—WAREHOUSE—Government of Canada, Hunter Bldg., Ottawa, seafood cold storage warehouse, **$200,000.** Dpt. Fisheries, Ottawa, Ont., engr.

Ont., Whitby—HOME—W. H. Westney, co. warden, R. R. 2, Pickering, county home, for Ontario County Council, W. G. Manning, clk., 416 Centre St. S. Approx. **$400,000.**

COMMERCIAL BUILDINGS

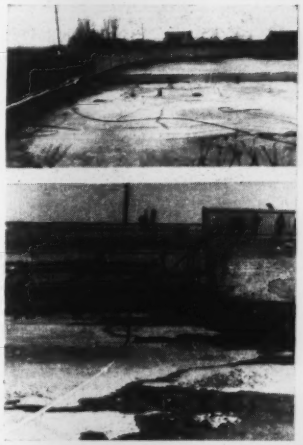
Ark., ElDorado—OFFICE—Mrs. C. M. Murphy, 325 West Ave., plans by Trapp & Clippard, Pyramid Bldg., Little Rock, 4 story office. **$300,000.**

Colo., Colorado Springs — APARTMENT — F. L. Davis & Pat Inglis, Colorado Springs, two 980 sq. ft. apartments, car ports and recreational area. **$300,000.**

●**Del., Wilmington**—APARTMENT DEVELOPMENT—Clifton Park Manor Inc., Du Pont Bldg., plans by A. D. Lueders, 1513 N. Uhles St., Arlington, Va., 920 unit apartment development, Governor Printz Blvd. **$5,924,000;** Clifton Park Apartments, Edgewood Section, **$6,000,000.**

●**Ill., Chicago**—APARTMENT—Harris Perlstein, pres. Pabst Brewing Co. and others, 221 N. LaSalle St., plans by Loebl Schlossman & Bennett, 333 N. Michigan St., Zone 1, 21 story,

"GUNITE" ENLARGES AND IMPROVES RESERVOIR



In 1947 we "GUNITED" the West End Reservoir at Hagerstown, Maryland. The pictures clearly show important stages in our work to give it greater capacity and to stop excessive leakage. After existing cracks in the concrete floor were sealed, "GUNITE" was applied to waterproof and reinforce the stone masonry and to add 30 inches to the height of the walls.

Many instances of repair, remodeling and new construction with "GUNITE" are described and pictured in Bulletin A2400. A request on your letterhead will bring your free copy by return mail.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

WELDING CONNECTORS
Saxe System Welded Connection Units for welded assembly

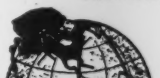
Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures.

J. H. WILLIAMS & COMPANY
Buffalo-7, New York
Canadian Representatives
G. D. PETERS CO. Montreal-2, Canada

DRILLING
ANYWHERE



We look into the earth

PENNSYLVANIA
DRILLING COMPANY
PITTSBURGH, PA.

MacArthur CONCRETE PILE CORPORATION

INSTALLING PILES OF EVERY TYPE THROUGHOUT THE U. S. A.

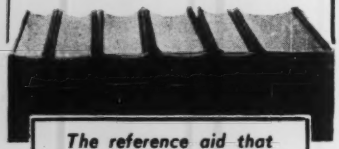
SINCE 1910—

Cast-in-place • Precast • Composite
Steel • Pipe • Timber

ALSO: SOIL AND ROCK BORINGS

BOSTON
CINCINNATI • NEW ORLEANS • 18 EAST 48th ST., NEW YORK 17, N. Y.

Save time and money on construction jobs



The reference aid that helps you solve your toughest construction problems

With the construction work that lies ahead for every engineer, it is only up to you to assure yourself of superior workmanship—ensure your work of the finest structural qualities—by providing yourself with this revision of the famous Hool and Kinne Library—the books which for years have been providing structural engineers with the facts they need on every problem concerned with the design and construction of civil engineering structures.

HOOL AND KINNE'S

Structural Engineers' Handbook Library

Revised by R. R. ZIPPRODT,

And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

6 volumes; 3763 pages; 2719 illustrations; 63 contributors

Each one of these six volumes is a complete reference in itself on some aspect of structural engineering. The library

▶**COVERS** the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members and the design of their connection with other members.

▶**EXPLAINS** the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

▶**GIVES** details of design and construction of steel, timber and concrete structures of all types.

EXAMINE IT FREE!

We invite you to inspect these books for yourself, because we know that that is the one way you can realize their true value to you, and to the jobs that you do. You want to back up your own knowledge with sure, easy-to-get facts, and you want to make your workmanship worthy of your best time and effort. Therefore, the best investment you can make is to add to your own experience the tested working aids given in this dependable reference library.

Send for all six books, and allow them to go to work for you on your toughest problems.

10-DAY TRIAL EXAMINATION

McGraw-Hill Book Co., Inc., 330 W. 42 St., N.Y. 18

You may send me Hool and Kinne's Structural Engineers' Library for my inspection. If the books prove satisfactory, I will send $4.75 in 10 days and $5.00 per month until I have paid the price of the books, $29.75. If the books are not what I want, I agree to return them within 10 days of receipt.

Name .....

Address .....

City..... Zone..... State.....

Company .....

Position NR-9-29-49

This offer applies to U.S. only.

258 apartments, steel frame apartment, Lakeshore Dr. and Barr Ave. **$3,000,000.**

Ill., Joliet—BUILDING—Young Mens Christian Assn., Millard F. Collins, secy., 215 Ottawa St., Joliet, plans by Loron Seron, 81 Chicago Ave., 2 story, bsmnt., 135x150 ft., steel, brick, stone Y.M.C.A. bldg. **$300,000.** Skidmore Owings Merrill, 100 W. Monroe St., Chicago, consult. engrs.

●**Ill., Maywood**—HOSPITAL—Baptist Home & Hospital, John R. Gray, pres., 315 Pine St., plans by E. E. and Elmer C. Roberts, Inc., 201 N. Wells St., Chicago, Zone 1, hospital and present hospital addn. **$1,000,000.**

Ind., Decatur — RECREATION CENTER — Decatur Foundation Inc., Decatur, plans by Raymond & Rado, 101 Park Ave., New York, N. Y., community youth and recreation center, **$300,000.** F. W. Allen Corp., 101 Park Ave., New York, N. Y., consult. engrs.

Ind., New Albany—CHURCH SCHOOL—St. Mary's Roman Catholic, Rev. Fr. James Jansen, 415 S St., plans by Thomas J. Nolan, 311 Ky. Home Life Bldg., Louisville, Ky., 2 and part 3 story, 53x116 ft. and 53x70 ft. L-shaped, brick, rein.-con., structural steel church school, S and Elm Sts. **$250,000.** Southern Eng. Consulting Service, 419 W. Main St., Louisville, Ky., mech. engr. CD 10/11/46.

Ia., Dubuque—SCHOOL—St. Patrick's R. C. Church, 15 and Main Sts., parochial school. **$300,000.**

●**Kan., Fort Riley** — HOUSING — Fort Riley Rental Housing Proj., Fort Riley, 400 unit military personnel housing. **$2,000,000.**

Kan., Hays — RECREATION — St. Joseph Academy, Hays, plans by Shaughnessy & Bower, 3527 Broadway, Kansas City, Mo., recreation bldg. **$250,000.**

La., Shreveport — HOUSING — Southern States Land Co., c/o W. R. Dawn, 10418 Garland Rd., Dallas, 90 frame, houses, concrete fdn., adjacent Linwood Park subdivision, **$540,000.**

●**Md., Baltimore** — APARTMENT — Mullan Bros., rear 3945 Greenmount Ave., 2 and 3 story, bsmnt., concrete, brick 150 unit garden type apartment, **$1,000,000.**

Mass., Norwood—HOUSING—Master Crafts Homes, Inc., c/o Peter Caporale, 132 Thorndike St., Brookline, plans by Ralph I. Williams, 36 Havilend St., Quincy, fifty 1 and 1½ story, 24x30 ft., brick houses, Margaret St. and Fayless Rd. Approx. **$460,000.**

Mass., Pittsfield—SCHOOL—St. Lukes Hospital, Sisters of Providence, Pittsfield, plans by Hampson & Fisher, 30 Backman St., 5 story, bsmnt., 100x220 ft., School of Nursing, East St. Approx. **$500,000.**

●**Mass., Somerset** — HOUSING — Mass. Construction Co., Prospect St., housing development, near Otis Field, **$3,000,000.**

Mass., Waltham —APARTMENT— Cornhill Realty Co., Inc., c/o D. S. Wexler & D. Fried, archts., 1 State St., Boston, 2 story, bsmnt., brick apartments, incl. 60 units, 11 Gardner St. Approx. **$250,000.**

●**Minn., Minneapolis** — HEADQUARTERS — Northwestern National Life Insurance Co., R. G. Stagg, pres., 430 Oak Grove St., headquarters insurance bldg., east shore Lake Calhoun, north of 36 St. **$2,000,000.**

Minn., Minneapolis — OFFICE — Texas Co., 300 Baker Bldg., plans by Magney, Tusler & Setter, 202 Foshay Tower, 7 story, 78x100 ft. office, Clifton Pl. between Oak Grove St. and Groveland Ave. **$300,000.**

●**Minn., St. Louis Park**—HOUSING—Garden Apartment Project, H. H. Bank, atty., 1012 Andrus Bldg., Minneapolis, 46 bldgs., incl. 184 units, between Minnetonka Blvd. and W. 31 St., west of Belt Line. **$1,500,000.**

●**N. H., Manchester** — MONASTERY, etc. — Franciscan Fathers, St. Anthony's Retreat House, Pittsfield, plans by Provost & Wright, Inc., 61 Amherst St., monastery and retreat house, Monmouth St. **$2,000,000.**

●**N. Y., Brooklyn**—HIGH SCHOOL—Roman Catholic Diocese of Brooklyn, 75 Greene Ave., Zone 5, plans by Henry V. Murphy, 1 Hanson Pl., Zone 17, 3 story girls high school, 9951-89 Shore Rd. **$1,250,000.**

N. Y., Forest Hills — APARTMENTS — M. Sorin, c/o Edwin Gerber, archt., 1180 Raymond Blvd., Newark, N. J., 2 two story apartments, 65 Ave. near 110 St. **$250,000.**

●**N. Y., New York**—CATHEDRAL—Armenian Church In America, 630 Second Ave., Zone 16, cathedral and cultural center, Second Ave. and 35 St. **$1,000,000.**

N. Y., New York—APARTMENT—Clarcian Realty Corp., c/o H. I. Feldman, archt., 415 Lexington Ave., New York, Zone 17, 6 story apartment, 116 Clark Pl. **$300,000.**

●**N. Y., New York** — OFFICE — Herbert J. Freezer, 200 Fifth Ave., Zone 10, plans by John Sloan Assoc., 420 Lexington Ave., Zone 17, 20 story office, on block bounded by 51 and 52 Sts., 7 Ave. and Broadway. **$9,000,000.**

●**N. Y., New York**—HOSPITAL—New York Infirmary, 535 Fifth Ave., Zone 17, plans by Skidmore, Owings & Merrill, 5 E. 57 St., Zone 22, 11 story aluminum and glass front hospital, 321 E. 15 St. **$4,050,000.**

N. Y., New York — GYMNASIUM, etc. — Power Memorial Academy, 47 Amsterdam Ave., Zone 23, plans by Kelly & Gruzen, 80 Fifth Ave., Zone 11, 5 story gymnasium and recreation bldg., 61 St. and Amsterdam Ave. **$500,000.** CD 9/25/47.

●**Okla., Enid**—HOSPITAL—Sisters of Most Precious Blood, Enid, plans by M. N. Wheeler, Bass Bldg., hospital. **$1,000,000.**

GRIFFIN

GRIFFIN

WELLPOINT SYSTEMS

JETTING PUMPS

Distributors

GRIFFIN ENGINEERING CORP.
2016 E. Adams St.,
JACKSONVILLE, FLA.

GRIFFIN EQUIPMENT CO., INC.
548 Indiana Street,
HAMMOND, INDIANA

GRIFFIN WELLPOINT CORP.
881 EAST 141st ST. • NEW YORK 54, N. Y.
Phones: MElrose 5-7704-5-6

McKIERNAN-TERRY
JOB-PROVEN
PILE HAMMERS

McKiernan-Terry Pile Hammers are job-proved and time-tested . . . the choice of engineers and contractors on major construction projects throughout the world. Available in a standardized line of 10 double-acting hammers, 5 single-acting hammers and 2 double-acting extractors. Write for free Bulletin.
Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKIERNAN-TERRY CORPORATION
Manufacturing Engineers
13 Park Row New York 7, N. Y.

GET **TWICE** THE LIFE AND SAVE WITH

"GUNITE"

Investigate its possibilities. Pneumatically Applied to Any Surface Any Thickness. Bunker Stacks, Tunnels, Reservoirs, Sewers, Walls, Tanks.

Gunite specialists since 1915.
Engineering Data—Estimates

SHOTCRETE CONSTRUCTION CO.
102 Locust St. Garden City, N. Y.
Garden City 7-5451

●**Okla., Grove**—HOTEL, etc.—Hi-Kool Ranch Corp., Grove, plans by A. J. Love, Spavinaw, motor hotel and tourist lodge, Grand Lake. **$1,000,000.**

Okla., Oklahoma City — APARTMENT — Pauline Kinkaid, 1304 Kinkaid Ave., plans by Thomas F. Hollifield, Bartlesville, 24 unit apartment, Johnston and Indiana Sts. **$250,000.**

●**Ore., Portland** — APARTMENT — Victor N. Jones & Assoc., Republic Bldg., Seattle, Wash., 14 story, 314 unit apartment, Park and Mill Sts., **$2,772,000;** 6 story, 101 unit, rein.-con. apartment, Winter and Union Sts., **$806,300.** CD 9/6.

R. I., Providence—CHURCH—St. Anthony's R. C. Parish, Rev. R. J. McVinney (Bishop), Fenner St., plans by Joseph M. Mosher, Westminster St., 2 story, basmnt, brick, steel church addn., alterations. **$250,000.**

S. C., Columbia — APARTMENT — King's Court Apartments, c/o Stork & Lyles, archts., 1302 Main St., 52 apartment units. **$325,000.**

Tenn., Chattanooga —APARTMENT— Glenwood Park Co., c/o Gill, Harrison & Assoc., archts., Chattanooga Bank Bldg., apartment development. **$500,000.**

Tenn., Chattanooga —APARTMENT— Montview Apartment Co., c/o Gill, Harrison & Assoc., archts., Chattanooga Bank Bldg., apartment development. **$400,000.**

Tex., Beaumont—APARTMENT—Hollywood Village Corp., Robert W. Clemens, pres., 4110 Dennis St., plans by Robert W. Clemens & Assoc., 4151 Dennis St., Houston, 90 unit asbestos siding, sheet rock, etc. apartment for negroes, concrete slab fdn. **$450,000;** 60 apartment units, adjacent 11 St., **$300,000.**

Tex., Bellaire—HOUSING—Babbitt & Beall Realty Co., 61 Fichter St., Houston, plans by Robert Hill, c/o owner, housing in Peaceful Valley, off Huisache on Antonie and Gary Sts., in Shady Villa Addn., **$265,000.**

Tex., Bellaire—MERCANTILE—Meyer Bros., Inc., 1511 Preston St., Houston, plans by L. Gabert & W. J. Wisdom, 135 Bell St., Houston, masonry mercantile, concrete slab fdn., air conditioning, **$275,000.**

Tex., Big Springs—STUDIOS—Bradshaw Sisters, Big Spring, plans by Puckett & French, 502 Petroleum Bldg., 80x231 ft., tile, stone, iron studios, concrete slab fdn. **$250,000.**

●**Tex., Dallas**—RESIDENCES—Crown Constr. Co., 1911 S. Westmoreland St., 400 residences, 95½ acre tract. **$3,200,000.** CD 9/15.

●**Tex., Dallas**—BANK, etc.—Republic National Bank of Dallas, 1315 Main St., plans by Harrison & Abramovitz, Wallace Grayson Gill and George F. Harrell, 1913 San Jacinto St., bank and office, **$4,000,000.** CD 4/26.

●**Tex., Houston** — COMMUNITY CENTER — Fairworth Co., Inc., c/o Westview Terrace, plans by Edward Bodet, 3104 Main St., masonry community center, concrete slab fdn., Silver Rd. **$1,000,000.**

Tex., Houston—BANK—First National Bank, 201 Main St., remodeling, altering masonry bank. **$300,000.** Dale S. Cooper & Assoc., 420 Sul Ross Ave., consult. engrs.

Tex., Houston—HOUSING—G. E. Development Corp., 1818 Calumet St., frame housing for Negroes, Fairbanks-W. Montgomery Rd. **$250,000.**

Tex., Houston — HOME — Holly Hall, c/o Houston Council of Church Women, c/o Cameron Fairchild, archt., 3044 San Felipe Rd., Old Folks Home. **$500,000.** CD 5/9.

Tex., Houston—HOUSING—Lewis A. Parker, 2144 Danville St., frame housing concrete slab fdn. **$250,000.**

Tex., Wichita Falls—STUDENT UNION—Hardin College, Wichita Falls, plans by Ray C. Arnhold, 339 Allison-Duncan Bldg., 1 story, 145x250 ft., masonry student union bldg. **$275,000.** CD 5/26.

●**Wash., Moses Lake** — DWELLING — I. E. Baldwin, Inc., 1109 E. 36 St., Seattle, Zone 3, 325 family dwelling units at Air Force Base. **$3,250,000.**

Wash., Seattle—SCHOOL—First Methodist Church, 5 Ave. and Marion St., Zone 1, plans by John Graham, Dexter Horton Bldg., Zone 4, church school. **$300,000.** Hansel Fink, 1701 Arch St., Phila., Pa., consultant. CD 3/29.

Wash., Spokane—HIGH SCHOOL—Gonzaga High School, E. 502 Boone St., 2 story, brick high school. **$800,000.**

Wis., Greenfield (Milwaukee P. O.)—SHOPPING CENTER—F. F. Wolfgram, 741 N. Milwaukee St., Milwaukee, Zone 2, and W. P. Marquard, 2925 N. Frederick Ave., Milwaukee, Zone 11, plans by Leigh Hunt, 3800 N. Humboldt Ave., Milwaukee, Zone 12, 1 story, 80x200 ft. shopping center and 24-26 unit motel. **$300,000.**

Alaska, Anchorage — APARTMENT — Al Swalling, Anchorage, plans by Manley & Mayer, Anchorage, 38 unit apartment. **$410,-400.**

●**Alaska, Anchorage** — APARTMENT — J. B. Warrack, Securities Bldg., Seattle 1, Wash., plans by Manley & Mayer, Anchorage, 59 unit Kinik Arms Apartment, **$637,200;** 34 unit Olaf Olson Apartment, **$367,200.**

Alta. Edmonton—COLLEGE—Alberta College, 21 101 St., plans by G. H. MacDonald, 834 Tegler Bldg., L-shaped bldg. **$350,000.**

●**Que., Montreal**—HOSPITAL—Reverend Sisters of the Grey Nuns, Grey St., hospital, Sherbrooke St. E. **$3,000,000.** CD 8/10/45.

●**Que., Montreal East (Postal Dist. Montreal)** —HOUSING—S. D. Miller, 6999 Cote des Neiges Rd., Montreal, plans by Ellasoph & Bernketiz, 1434 Ste. Catherine St. W., Montreal, 300 one story, 25x36 ft., concrete houses, Sherbrooke St. **$1,934,000.**

Que., St. Jerome — COLLEGE — Externat Classique, c/o Rev. Abbe Theoret, St. Jerome, college. **$250,000.**

INDUSTRIAL BUILDINGS

Ia., Des Moines—PLANT—Iowa Food Mfg. Co., 200 S. E. 34 St., mfg. plant addn. **$700,-000.**

Kan., Ulysses—WAREHOUSE, etc.—Pioneer Co-operative Assn., Ulysses, garage and warehouse, **$150,000.** Southwest Engineers, 510 Transit Tower, San Antonio, Tex., consult engrs.

Minn., Moorhead—PLANT—Minnesota Farm Bureau Service Co., H. Goeway, Moorhead, 6 story, 60x230 ft. fertilizer plant. **$300,000.**

Mont., Great Falls — WELDING PLANT — Engineering Development Corp., Bremerton, Wash., welding plant. **$100,000.**

Tenn., Memphis—MILL—Plough, Inc., c/o Wigton-Abbott Corp., archts., 1225 South Ave., Plainfield, N. J., mill addn., remodeling. Approx. **$200,000.** CD 1/28.

Tex., Houston — WAREHOUSE — Consolidated Grocers Corp., 1903 Commerce St., 60,000 sq. ft. masonry, steel warehouse, air-conditioning, 1800 Block Nance St., **$480,000.** Reid-Murdock, 1903 Commerce St., lessee.

Tex., Port Arthur—SUB STATION—Gulf States Utilities Co., Port Arthur, addnl. transformer sub station, **$100,000.**

●**Wis., Milwaukee**—PLANT, etc.—Luick Dairy Co., 601 Ogden Ave., plans by Lawrence Peterson & Assoc., 312 E. Wisconsin St., 2 story, 160x202 ft. ice cream plant, 2 story, 180x1230 ft. dairy and 1 story garage. **$2,000,000.** CD 9/5/45.

Alaska, Juneau—LUMBER MILL—Juneau Spruce Corp., Juneau, rebuilding lumber mill. **$600,000.**

●**Alaska, Skagway**—PLANT—Aluminum Co. of America, Gulf Bldg., Pittsburgh, Pa., aluminum plant. **$13,000,000.**

●**Puerto Rica, Ponce** — REFINERY — Puerto Rican Oil Refining Co., Ponce and San Juan, petroleum refinery. **$20,000,000.**

Alta., Calgary—RACK HOUSES, etc.—Alberta Distillers, Ltd., Calgary, 2 rack house addns., plant. **$450,000.**

Newfoundland, Grand Bank — POWER PLANT — United Towns Electric Co., Grand Bank, diesel generating power plant, Approx. **$150,000.**

Ont., Burlington—FACTORY—Alchem Ltd., Burlington, factory, **$300,000.**

Ont., Ingersoll — PLANT — William Stone Sons Ltd., Ingersoll, plant addn. **$175,000.**

Ont., London—PLANT—Kelvinator Co. of Canada, Dundas St. E., heating plant, incl. 50x70 ft. concrete, steel boiler house, piping, boilers, etc. **$200,000.** M. M. Dillon, Bank of Toronto Bldg., London, engr.

Ont., Tillsonburg — PLANT — Livingston Wood Products Ltd., Tillsonburg, plant addn. **$100,000.**

Que., Montreal—PLANT—Canadian Pneumatic Tool Co. Ltd., 757 St. Antoine St., plans by R. E. Bostrom, 660 W. Ste Catherine St., plant, Royal Mount Ave. **$300,000.**

Que., St. Johns—FACTORY—Belding Corticelli Ltd., 1455 Shearer St., Montreal, 2 story, 160x200 ft. factory addn. **$100,000.**

Que., Three Rivers—BREWERY—Eastern Agencies Ltd., 108 Gallery Sy., Montreal, plans by Pellers Co. Ltd., Hamilton, 2½ story, 140x240 ft. concrete, steel, brick brewery, **$450,000.** CD 8/8.

Sask., Estevan—GAS WELL DRILLING—F. H. Rhodes, c/o W. Bastian, Estevan gas well drilling, **$150,000.**

UNCLASSIFIED

California—GAS STORAGE PLANT—Pacific Gas & Electric Co., 245 Market St., San Francisco, underground gas storage plant on Kingsbury property on Live Oak Rd., 1 mi. north of Yuba City, Sutter Co. **$660,000.**

Calif., Garvey—SWIMMING POOL, etc.—Los Angeles Co., plans by J. Earl Trudeau, 40 W. Bay St., Alhambra, swimming pool, facilities at Garvey Memorial Recreation Center, **$105,000.**

●**Calif., Los Angeles**—EXHIBIT BLDG.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Wurdman & Beckett, 3757 Wilshire Blvd., Los Angeles, exhibit bldg. for 48 District Agricultural Assn. **$1,450,000.**

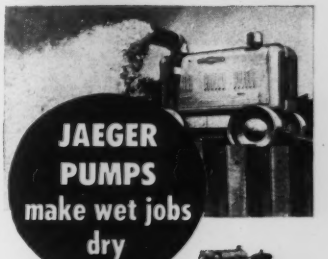
Calif., Mariposa—EXHIBIT BLDGS.—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Mayo & Johnson, 306 Exchange Bldg., Stockton, 2 exhibit bldgs. for 34th Agricultural Dist. **$120,000.**

Calif., Oxnard—PARKS—City, voted bonds Aug. 26, public parks, **$100,000.** E. O. Imus, city engr.

Colorado—RURAL DISTRIBUTION LINES Southeast Colorado Power Assoc., La Junta, 171 mi. rural distr. lines and sys. imprvs. Prowers Co. **$655,000.** CD 9/9/48.

Florida—RURAL DISTRIBUTION LINES—Clay Electric Co-operative, Inc., Keystone Heights, 137.4 mi. rural distr. lines, Clay Co., **$137,000.** E. P. McLean Eng. Co., 815 S. Main St., Moultrie, Ga., engr.; 170 mi. rural distr. line and sys. imprvs., Clay Co. **$585,000.**

New 2" aluminum pump weighs 105 lbs., pumps 9000 gph . . . Gives high head performance for price of low head pump.

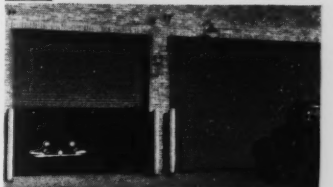


Extra power and double priming action to de-water faster. Built to outlast cheaper pumps by thousands of hours.

Heavy duty 2" to 10" models for low or high head requirements. Super-Jet pumps for pressures to 275 lbs. Diaphragm and caisson pumps. Get catalog.

THE JAEGER MACHINE COMPANY
Columbus 16, Ohio

KINNEAR
Rolling Doors
for
ANY INDUSTRIAL NEED!



Whether needed in a large steel mill . . . or simply at a small warehouse loading-platform . . . KINNEAR can supply steel rolling doors to fit any requirement. These steel interlocking-slat curtains rise straight up and coil compactly above the lintel! And when shut they supply extra protection against fire, theft and the elements. Available with push-button motor operation from one or several strategic points. Write for details.

The KINNEAR Manufacturing Co.
Factories:
1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in Principal Cities

SAVING RATES for DOOR WAYS
KINNEAR
ROLLING DOORS

looking for paint?

you'll find it easier, faster if you...

...reach for your SWEET'S

When you need specific information on materials, equipment or services, reach for your Sweet's File, Engineering (the big blue file). It contains 330 manufacturers' catalogs full of useful information on thousands of products . . . from absorbers—gas, to zinc galvanizing. Cross indexing speeds finding.

If Sweet's File, Engineering, is not available in your office, make request immediately for application form. Files are distributed FREE to qualified organizations and individuals.

Sweet's

CATALOG SERVICE

for easier, faster selection of products

119 W. 40th ST., NEW YORK 18, N. Y.

Fla., Jacksonville—FIELD HOUSE, etc.—Duval Co. Bd. Pub. Instruction, bond election Oct. 4, School 66 du Pont-Athletic field house band room, storage space and twelve classroom addn., **$222,000.**

Indiana—RURAL DISTRIBUTION LINES—Miami-Case Rural Electric Membership Corp., Peru, 46.5 mi. rural distr. line serving 140 rural consumers and sys. imprvs., Miami Co. **$210,000.**

Kentucky—RURAL DISTRIBUTION LINES—Big Sandy Rural Electric Co-operative Corp., Paintsville, 206 mi. rural distr. lines, Floyd Co. **$206,000.** Patterson & Dewar, 208 Rutland Bldg., Decatur, engrs.

●**Me., Old Orchard Beach**—HORSE RACING TRACK—Old Orchard Beach Downs Corp., c/o Fred J. Snow, Old Orchard Beach, horse racing plant-kite track, incl. steel grandstand, clubhouse, dormitories, etc. **$1,000,000.**

Mass., Boston — RECREATION CENTER — Commonwealth of Massachusetts, Metropolitan Dist. Comr., 20 Somerset St., Boston, Charlesbank Recreation Center, Storrow Memo Embankment, incl. swimming pool, bath house, athletic field, childrens playground, park, boat and skate house, refectory, overpasses, parking spaces, power boat landing, etc. Approx. **$100,000.**

Mississippi — RURAL DISTRIBUTION LINES — Four County Electric Power Assoc., Columbus, 325 mi. rural distr. lines, Oktibbeha Co., **$325,000.** Allen & Hoskall, 65 McCall Place, Memphis, 3, Tenn. engrs. CD 9/2.

Mississippi — RURAL DISTRIBUTION LINES — Natchez Trace Electric Power Assoc., Houston, 159 mi. rural distr. lines, Chickasaw Co. **$159,000.** Bowman & Bowman, Box 518, Greenwood, engrs. CD 7/30.

Mississippi—RURAL DISTRIBUTION LINES—Southern Pine Electric Power Assn., Taylorsville, 350 mi. rural distr. lines Smith Co. **$350,000.** Bowman & Bowman, Box 518, Greenwood, engrs. CD 5/27.

Mississippi — RURAL DISTRIBUTION LINES — Tombigbee Electric Power Assoc., Tupelo, 155 mi. rural distr. line, Lee Co. **$155,000.** Bowman & Bowman, Box 518, Greenwood, engrs.

Miss., Centerville—NATURAL GAS SYSTEM—Town, voted **$108,500** bonds, natural gas sys. CD 8/18.

Missouri—RURAL DISTRIBUTION LINES—Grundy Electric Co-operative, Inc., Trenton, 102 mi. rural distr. lines, sys. imprvs., Grundy Co. **$240,000.**

Mont., White Sulphur Springs—SWIMMING POOL—City, City Hall, plans by Oswald Berg, Jr., Bozeman, swimming pool, **$100,000.**

N. J., Trenton—PARKING YARD—Charles N. Schrager, Inc., 222 E. Hanover St., roof top parking yard over bldg., Broad and Front Sts., **$350,000.**

New Mexico — RURAL DISTRIBUTION LINES — Continental Divide Electric Co-operative, Gallup, 200 mi. 13.8-23.9 kv. rural distr. lines, McKinley Co. **$325,000.** Southwest Engineers, 510 Transit Tower, San Antonio, Tex., consult. engrs.

South Carolina—RURAL DISTRIBUTION LINES—Harry Electric Co-operative, Inc., Conway, 75 mi. rural distr. lines, sys. imprvs., Harry Co. **$125,000.**

Tex., Angleton—GAS SYSTEM—City, municipal gas sys. **$200,000.** Garrett Eng. Co., 5008 Almeda St., Houston, consult. engr.

Tex., Beaumont — LIGHTING SYSTEM — Gulf States Utilities Co., 362 Liberty St., addnl. lighting sys., construct 462 electric lights, Briarcliff and Calder Highlands zone, Lamar Addn. **$100,000.**

Tex., Bryan—ELECTRICAL DISTRIBUTION SYSTEM—City, Roland C. Dansby, mayor, City Hall, voted **$150,000** bonds, addnl. electrical distr. sys. Thomas Bryan & Assoc., M. & M. Bldg., Houston, consult. engrs. CD 8/29.

Tex., Falfurrias—GAS SYSTEM—City, voted bonds, natural gas sys. imprvs., extens. **$150,000.** The Marvin Turner Engineers, Nalle Bldg. Annex, Austin, consult. engrs. CD 8/25.

●**Wash., Seattle**—STADIUM IMPRVS.—University of Washington, 15 Ave. N.E. and E. 40 St., Zone 5, plans by G. W. Stoddard & Assoc., 1213 Westlake Ave. N., upper deck in football stadium, **$1,500,000.** CD 12/31/48.

Wyoming—RURAL DISTRIBUTION LINES—Big Horn Rural Electric Co., Basin, 20 mi. rural distr. lines, sys. imprvs. and construction previously approved construction, Big Horn Co., **$375,000.** H. S. Nixon Eng. Co., WOW Bldg., Omaha, Neb., consult. engr. CD 7/1.

●**Wyo., Laramie**—FIELD HOUSE, etc.—State of Wyoming, Cheyenne, revised plans nearing completion by Goodrich & Wilking, Casper, field house, **$1,500,000,** and stadium, **$275,000** at University of Wyoming. CD 6/22, under LB.

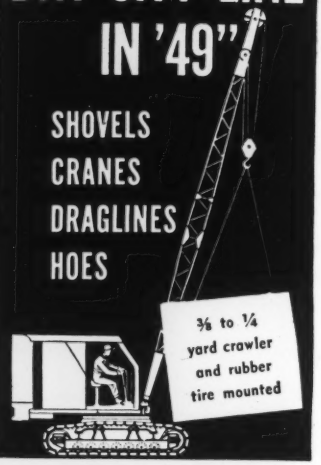
Wyo., Rock Springs—SWIMMING POOL—Bd. Trustees Rock Springs School Dist., Rock Springs, plans by Kellogg & Kellogg, 1309 Carey Ave., Cheyenne, swimming pool, **$200,000.**

Wyo., Saratoga—SWIMMING POOL, etc.—Saratoga Hotel Co., W. C. Walker, pres., 118 W. 5 Ave., Cheyenne, plans by Bradley & Porter, 1009 E. Lincolnway, Cheyenne, swimming pool, repairs and imprvs. to hotel, Hot Springs State Reserve. **$125,000.**

●**Que., Montreal**—PARK IMPRVS.—Municipality grading, drainage, swimming pools and imprvs., St. Helens Island, **$1,000,000** voted. H. A. Gibeau, city engr.

"See the BAY CITY LINE IN '49"

SHOVELS
CRANES
DRAGLINES
HOES



BAY CITY

BAY CITY SHOVELS, INC., BAY CITY, MICH.

Diamond Core Drilling

CORE BORINGS for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

Tinney Drilling Co.
Grafton, W. Va.

"GUNITE"
NEW CONSTRUCTION AND REPAIRS

- Prestressed Tanks
- Repair all Types Disintegrated Concrete
- Dam Reconstruction and Repairs
- Linings and Repairs to Reservoirs, Stacks, Bunkers, Sewers, Tanks, Tunnels, Pen Stocks
- Structural Steel Encasements
- Restoration of Masonry Structures

Experienced Personnel
Write for our new 48 page Bulletin
PRESSURE CONCRETE CO.
Gunite Contractors and Engineers
193 Emmett Street So. Court Street
Newark 5, New Jersey Florence, Alabama
33 N. LaSalle St., Chicago 2, Ill.

CONSTRUCTION REPORTS - Second Section

WATER SUPPLY

BIDS ASKED

October 4

Tex., Waller—City, WW sys. $85,000. Howe & Wise, 4119 San Jacinto St., Houston, engrs.

LOW BIDDERS

O., Bellbrook—City, John Black, clk., Bellbrook, Aug. 27, water distr. sys. and elevated storage, from G. H. Leach Co., Inc., Bellefontaine Natl. Bank Bldg., Bellefontaine, **$56,-348.** CD 8/12.

●**O., Cleveland**—City, E. J. Crown, dir. Pub. Utilities, City Hall, Lakeside and E. 6 Sts., Sept. 2, Nottingham Filtration plant (Div. C) incl. pump bldg., machine shop and garage, raw water intake and filter equip., from Hunkin-Conkey Constr. Co., 1740 E. 12 St., **$3,237,445.** CD 8/19.

O., Toledo—City, Sept. 13, installing approx. 3,900 lin. ft. 24 in. watermain in East Toledo, from Utilities Constr. Co., and Angelo Marra Constr Co., 643 Green Rd., South Euclid, **$26,690.** Approx. 13,000 lin. ft. 36 in. watermain in East Toledo, from L. H. Halpin, 2361 Scranton Dr., **$138,720.** Wm. Jones, city water engr.

Tex., Austin—University of Texas, c/o Bd. Regents, Austin, Sept. 14, water sys., from Joe Bland Constr. Co., P. O. Box 1158, **$30,181.** CD 9/2.

Wash., Auburn—Water Dist. 64, Auburn, Sept. 14, 33,000 ft. 2-to 8-in. watermains, well and 100,000 gal. storage tank, from State Constr. Co., 1750 19 Ave. S., Seattle, **$72,065.** CD 9/7.

CONTRACTS AWARDED

Minn., St. Paul—Owner, c/o J. J. McDavitt, city purch. agt., furnishing, installing watermains, at and near Water Dpt. McCarron Station, to E. J. Bianconi, 433 Upper Levee, St. Paul, **$37,950.** Bids 8/30. CD 9/22.

O., Upper Sandusky—Bd. Pub. Affairs, Upper Sandusky, imprv. water sys. with addnl. filter, main supply line, new pump and new line to auxillary tank, to Richland Constr. Co., Mansfield, **$45,253.** Est. $45,000. Awarded 9/14.

Tex., Dallas—Roland Pelt, 2215 Lawndale St., c.i. water lines on 95½ acre tract, to Crown Constr. Co., 1911 S. Westmoreland St., Approx. **$48,000.**

Tex., Houston—Southern Builders, Inc., Greenway Park, 1220 Givens St., water lines, facilities. Owner builds. **$30,000.**

Tex., Houston—Wright Land Co., 1st National Bank Bldg., c.i. waterlines on 76.49 acre plot. Owner builds. Approx. **$35,000.**

Tex., Port Lavaca and Fort Point—Calhoun Development Co., Port Lavaca, c.i. waterlines, facilities, to Thomas Bate & Sons, 1107 Girard St., Houston. Approx. **$37,000.** Wyatt C. Hedrick, 5201 Fannin St., Houston, engr.

W. Va., Petersburg—City, City Bldg., 1 story 30x30 ft., brick block water treatment plant and mechanical to Turner & Harper Strasburg. Approx. **$65,000.** Small-Pave Eng. Co. 1st National Bank, Cumberland, Md., engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

October 6

Va., Williamsburg—City, Hugh B. Rice, mgr., City Hall, Proposal 1, imprvs., extens. to sewage treatment plant; Proposal 2, steam generator for can washing; Proposal 3, reconditioning garbage can washing equip. Plans deposit $25. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs.

Bids Asked

N. S., Antigonish—Town, D. P. Chisholm, clk., sewerage sys. Approx. $250,000. S. E. Wrightmore, Amherst, archt. CD 12/11/44.

LOW BIDDERS

Tex., Austin—University of Texas, c/o Bd. Regents, Austin, Sept. 14, sanitary and storm sewers, from Joe Bland Constr. Co., P. O. Box 1158, **$60,129.** CD 8/22.

Tex., Texas City—City, rejected bids Aug. 20, sewage treatment plant imprv. **$64,000.**

CONTRACTS AWARDED

O., Cleveland—City, L. J. Weil, purch. agt., City Hall, Lakeside and E. 6 Sts., storm and sanitary sewers, appurtenances, W. 144 St., Elsetta Ave., W. 145 St. and Milton Rd., to Utilities Constr. Co., 643 Green Rd., South Euclid, **$55,660.** Est. $60,000. J. C. Wemrick, c/o owner, city engr. Bids 9/1, awarded 9/6.

O., Cleveland Heights—City, H. M. Kirrpel, mgr., City Hall, 2953 Mayfield Rd., storm and sanitary sewer Meadowbrook and Lee Rds., to Curro Constr. Co., Union Commerce Bldg., Cleveland, **$76,208.** Est. $150,000. F. A. Pease Eng. Co., 603 Frederick Bldg., Cleveland, engr. Bids 8/12, awarded 9/6.

Ore., Portland—City, City Hall, 60 m. g. daily capacity sewage treatment plant, incl. 2 story administration bldg., sewage disposal lab., to L. H. Hoffman Co., 715 S.W. Columbia St., **$980,621.** Bids 8/9, awarded 8/30. CD 8/11, under LB.

Pa., Tyrone—West Virginia Pulp & Paper Co., Tyrone, rein.-con. industrial waste treatment plant, to John Yenter, Commerce Bldg., Approx. **$150,000.** John Funk, 440 Park Ave., New York, N. Y., consult. engr. CD 10/3/45.

Tex., Dallas—Roland Pelt, 2215 Lawndale St., sanitary and storm sewers on 95½ acre tract, to Crown Constr. Co., 1911 S. Westmoreland St. Approx. **$78,000.**

Tex., Houston — Southern Builders, Inc., Greenway Park, 1200 Givens St., sanitary sewer lines, Owner builds, Approx. **$60,000.**

Tex., Houston—Wright Land Co., 1st National Bank Bldg., sanitary and storm sewers on 76.59-acre plot. Owner builds. Approx. **$60,000.**

Tex., Port Lavaca and Fort Point—Calhoun Development Co., Port Lavaca, sanitary sewers, to Thomas Bate & Sons, 1107 Girard St., Houston, Approx. **$55,000.** Wyatt C. Hedrick, 5201 Fannin St., Houston, engr.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

October 6	**Kentucky**
Massachusetts	**Washington**
October 7	**October 25**
Kansas	**Maryland**

October 4

†Maryland—U. S. Eng., St. Francis DeSales Church Hall, Benedict, highway bridge, swing drawspan across Patuxent River, between Hallowing Point, Calvert Co. and Town Point at Benedict, Charles Co.

October 13

Ill., Chicago—City of Chicago Dpt. Purchases, Contracts & Supplies, City Hall, 3 span continuous steel girder bridge, concrete substructure, concrete deck, Peoria St. Bridge 2525.1-IB, West Route Superhighway. Plans deposit $40.

About October 20

†Kan., Kansas City—U. S. Eng., 601 Davidson Bldg., Kansas City, 8, Mo., installing lifting mechanisms for Union Pacific Railroad Bridge, Serial No. CIVENG 23-028-50-32. Extended date. CD 9/7.

LOW BIDDERS

Alabama — State Hy. Dpt., Montgomery, Sept. 16, bridge over Bear Creek 0.051 mi. county road between Margerum and Alliseboro, Colbert Co., from Leon Simpson Constr. Co., Clanton, **$51,692,** CD 8/29; 0.84 mi. bridge on Elba-Kinston Rd., Coffee Co., from G. W. Norrell Contg. Co., Georgiana, **$51,365.**

Connecticut—State, G. Albert Hill, state hy. comr., Hartford, Sept. 19, 300 ft. twin span, rein.-con. girder bridge on rein.-con. abutments over Quinebaug River, incl. 1613 ft. bit. macad. approaches, Plainfield-Canterbury, from Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Warwick, R. I., **$209,967.** CD 9/8.

Delaware—State Hy. Dpt., Dover, rejected bids Aug. 10, concrete, steel deck structure, 0.131 mi. Charles W. Cullen Bridge, Indiana River Inlet, Sussex Co., Bl. 13 (3), Contr. 1630, Sussex Co., LB. **$759,913.** CD 9/17, under LB.

Ill., Aurora—City, City Hall, John P. Thill, bridge over Fox River at Illinois St., from H. H. Mass, Algonquin, and Joliet Bridge & Constr. Co., 68 N. Ohio St., Joliet, **$267,732.** Donald Cooper, 231 S. LaSalle St., Chicago, Zone 4, engr. CD 12/27.

CONTRACTS AWARDED

Alabama — State Hy. Dpt., Montgomery, 0.159 mi. bridges on road between Aliceville and Pickensville, S-677 Pickens Co., to Montgomery Constr. Co., Bell Bldg., Montgomery, **$68,345.** Bids 9/2. CD 8/19.

†Idaho — Bureau P. Rds., General Services Admin., Broadway-Oak Bldg., Portland, Ore., bridge over Blue Creek Bay, North Pacific Highway, Proj. 7-A6, Unit 2, Kootenai Co., to Paul Jarvis, Inc., 1670 W. Ewing St., Seattle, Wash., Zone 99, **$871,155.** Bids 9/14. CD 9/19, under LB.

South Carolina—State Hy. Dpt., Columbia, 90 ft. and 120 ft. rein.-con bridges in Lynches River Swamp, incl. 660 ft. rein.-con. bridge over Lynches River and 0.333 mi. earth graded approaches, U. S. Route 52, U. S. Docket 21-305, Florence Co., to McMeekin Constr. Co., Inc., Sheraw, **$102,172.** Bids 9/13. CD 9/1.

Tex., Beaumont—Atchison, Topeka & Santa Fe Ry. Co., F. D. Kinnie, ch. engr., General Office Bldg., Topeka, Kan., enlarging railway bridge spanning Hildebrands Bayou, force account, **$415,000.**

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

October 4	**Kentucky**
Iowa	**Washington**
October 5	**October 11**
Louisiana	**Kansas**
October 6	**New Jersey**
New Jersey	**October 17**
October 7	**New Hampshire**
Kansas	

October 4

Del., New Castle—Mayor and Council of City of New Castle, Council Chambers, 2 and Delaware Sts., Contr. NC 49-1, asph. resurf. Harmony St., Second St. to First St.; Contr. NC 49-2, asph. resurf. Fourth St., Delaware Ave. to Chestnut St.; Contr. NC 49-3, asph. resur. Fifth St., South to Harmony Sts.; Contr. NC 49-4, asph, resurf. Ninth St., Washington Ave. to Young St. Plans deposit $2 each. Marvin S. Smith, city engr.

October 13

Minn., Fergus Falls—Otter Tail Co., W. Lincoln, aud., Fergus Falls, grade, grav. 3.2 mi., one 30 ft. precast concrete cattle pass between County Aid Rd. 7, 3 mi. north of Underwood and State Aid Rd. 1, S. P. 56-502-02 (SAR 12) Minn. Proj. S 690 (3). $50,000. Plans deposit $1.80. W. P. Huber, State Hy. Dpt., St. Paul, co. hy. engr.

SOON LETS CONTRACT

Wash., Bellevue—Veterans Mutual Bldg. Assn., c/o Gardner, Gardner & Hitchings, archts., Arctic Bldg., soon lets contract clearing right-of-way for roads on site of $700,000 100-home housing. Plans deposit $5.

LOW BIDDERS

Alabama—State Hy. Dpt., Montgomery, Sept. 2, double surf. tr. 5.018 mi. from Ala. 112 southeast to Diamond FA-S-427 (1), Marshall Co., from W. L. Cobb Constr. Co., Decatur, Ga., **$88,670.** CD 8/19.

Alabama—State Hy. Dpt., Montgomery, Sept. 16, grading, drainage 6.112 mi. Davenport-Chapman Rd., Butler and Lowndes Counties, from Vandergriff Constr. Co., 4708 N. Court St., Montgomery, **$155,594***** grading, drainage 5.811 mi. from Haleyville toward Natural Bridge, Winston Co., from Clyde Mitchell Constr. Co., 104 N. 44 St., Birmingham, **$128,-301***** grading, drainage 6.051 mi. road from Wren east toward Danville, Lawrence Co., from Georgia-Alabama Road Constr. Co., Comer Bldg., Birmingham, **$132,851***** grading, drainage 4.271 mi. from Millport to Mississippi State Line, Lamar Co., from Moss-Thornton Co., Leeds, **$127,661.** CD 8/29.

Idaho—State Hy. Dpt., Boise, b. conc. 6.861 mi., grading, drainage 0.986 mi. U. S. 30, Bannock Co., from Carl E. Nelson, Logan, Utah, **$221,738.** Est. $214,458.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, Sept. 14, c. conc. 0.8 mi. culverts, Central City SF 44061, 45060, Merrick Co., from Abel Constr. Co., 895 N. 16 St., Lincoln, **$69,353.** CD 9/8.

North Dakota—State Hy. Dpt., Bismarck, rejected bids Aug. 26, b. conc. and surf. and incidental s.364 mi. F-366 (6), Pembina Co., LB. **$219,426.** CD 9/1 under LB.

O., Cuyahoga Heights—Comrs., Cuyahoga Co., Frank Husak, clk., Courthouse, Lakeside and Ontario Sts., Cleveland, grading, draining, wid'n. and resurf., incl. storm sewer, catch basins, from Velotta Constr. Co., 4614 Prospect Ave., Cleveland, **$75,174.** Est. $76,100. A. S. Porter Standard Bldg., Cleveland, co. engr.

O., Shaker Heights—City, M. Beth, purch. agt., City Hall, 3400 Lee Rd., paving S. Park Driveway from Coventry to Larchmere, from Cuyahoga Asphalt Co., 13125 Shaker Square, Cleveland, **$54,195.** Est. $60,000. F. A. Pease Eng. Co., Frederick Bldg., 4 St., Cleveland, engr.

Oklahoma—State Hy. Dpt., Oklahoma City, 1.255 mi. grading, drainage, minor structures, 1 bridge, State Hy. 23, south of Bartlesville, Washington Co., from Steinberg Constr. Co., Admiral Blvd., Tulsa, Zone 3, **$78,972** est. **$71,925***** c. conc. 1.999 mi. U. S. 183, in Woodward, Woodward Co., from Ames Constr. Co., 1647 Exchange St., Oklahoma City, Zone 9, **$368,548** est. $338,627*** received no bids, traffic bound surf. 6.448 mi. county road southwest of Natura, Okmulgee Co., est. **$6,782.**

Texas—State Hy. Comm., Austin, Sept. 20, flexible base, single asph. surf. tr. 4.125 mi. Hy. F.M. 71 from Peerless to Emblem, Control No. 546-4-1, FP No. S 258 (2), Hopkins Co., from C. W. Pelphrey Co., Gladewater, **$86,015 ***** C. 221-4 and 3- 8 and 16, Franklin and Red River Counties, from W. S. Crawford Co., 5350 Montrose Dr., Dallas, **$52,334***** soil asph. base, single asph. surf. tr. 4.397 mi. Hy. F.M. 857, from U. S. 80, 0.4 mi. east of Grand Saline southeast to Sand Flat, Control No. 771-4-1, FP No. S 1183 (1), Van Zandt Co., from Dew Constr. Co., Inc., Tyler, **$34,679***** flexible base, single asph. surf. tr. 8.989 mi. Hy. FM 619, from Fisher Co. line to 8.9 mi. northeast, Control No. C 360-7-2 and 360-7-3, FP No. S 319 (3), Stonewall Co., from Strain & Brown, San Angelo, **$142,915***** flexible base, single asph. surf. tr. 7.603 mi. Hy. F.M. 705, from 2.7 mi. south of Macune to Massey School, Control No. 1079-1-3, FP No. S 1161 (2), San Augustine Co., from W. Paul Carlisle, Center, **$88,203***** flexible base, single asph. surf. tr. 3.38 mi. Hy. F.M. 1009 from U. S. 90 at Felicia south and east to road intersection 1.5 mi. west of Jefferson Co. line, Control No. 601-4-1, FP No. S 1324 (1), Liberty Co., from Trott & Thomson, 3940 Crockett St., Beaumont, **$60,771***** fdn. course, single asph. surf. tr. 6.647 mi. Hy. F.M. 107, from Moody to Eddy, Control No. 513-2-1, FP No. S 1118 (1), McLellan Co., from Fred Hall & Son, Valley Mills, **$53,783.** CD 9/5.

Tex., Fort Worth—City, W. O. Jones, mgr., Sept. 15, wid'n., repaving W. 10 St. between Cherry and Penn Sts., from Brown & Root, Inc., 1001 Jacksboro Hy., **$79,090, Est. $77,000.** CD 8/31.

Wash., Tacoma—City, City Hall, resurf. St. Helens Ave. Broadway and other streets, from Asphaltic Paving & Eng. Co., P. O. Box 106, South Tacoma, **$61,010.** D. E. Morris, city engr.

CONTRACTS AWARDED

Alabama—State Hy. Dpt., Montgomery, liquid seal and plant mix 17.386 mi. Montgomery-Orion Rd., F-74 (2) and 209 (4),

Montgomery Co., to Haigler Constr. Co., Atlanta Hy., Montgomery, **$101,279***** base, single surf. tr. and plant mix 7.402 mi. road from Gadsden to Mt. Meigs, FA-S-252(1) and SACP-218-A, Etowah Co., J. B. Maynard, Alexander City, **$68,082*****grading, drainage 5.056 mi. county road from Hodges to Atwood FAS-S-435 (1), Franklin Co., to Anderson-Gregory Co., Maxwell House, Nashville, Tenn., **$73,093** ***grading, drainage 6.741 mi. from Cullman north toward Eva, S-675-A, Cullman Co., to Moss-Thornton Co., Leeds, **$73,254.** Grand total $314,708. Bids 9/2. CD 8/19.

Idaho—State Hy. Dpt., Boise, roadbed, drainage structures, crushed rock surf. 3.335 mi. Coeur d'Alene Valley Hy., Kootenai Co., to Halverson Constr. Co., Salem, Ore., **$187,947.** CD 8/11.

Idaho—State Hy. Dpt., Boise, relocating 12.5 mi. road, Cascade reservoir area, Valley Co., to Morgan Constr. Co., New Meadows, **$107,647.** Awarded 9/19.

Ia., Council Bluffs — Pottawattamie Co., Council Bluffs, surf. 24.75 mi. roads, to Missouri Valley Limestone Co., Missouri Valley, **$61,896.**

Nebraska—State Dpt. Roads & Irrigation, Lincoln, grading, grading for detour, sand gravel surf. for detour, c. conc., culverts, culverts for detour 2.1 mi. FA-F-20, Valley-Waterloo, to Missouri Valley Constr. Co., Omaha Natl. Bank Bldg., Omaha, **$137,507.** Bids 9/15. CD 9/8.

†N. M., Los Alamos—U. S. Atomic Energy Comm., Los Alamos, access roads. Inv. No. 291-50-8, to Lowdermilk Bros., Los Alamos, **$91,542.** Bids 9/8. CD 8/23.

●Ohio—State Hy. Dpt., T. J. Kauer, dir., Columbus, Zone 15, b. conc. wid'n., resurf 7.046 mi. S. R. 13, S. R. 75, Perry Co., to Shelly & Sands, Inc., Thornville, **$172,439** est. $183,760***b. conc. wid'n., resurf. 10.606 mi. S. R. 75, Jackson Co., to Southern Quarries & Contg. Div. of New York Coal Sales Co., 150 E. Broad St., Columbus, **$304,099** est $390,400***b. conc. wid'n., resurf. 2.902 mi. U. S. R. 40, Belmont Co., to Keystone Bituminous Corp., Box 270, Wheeling, W. Va., **$81,003** est. $87,150***c. conc. - b. conc. and construct continuance half-through steel girder bridge with concrete deck and concrete substructure Bridge No. PO-5-60, 0.402 mi. S. R. 5, Portage Co., to Visintine & Co., 1315 Edgehill Rd., Columbus, **$740,000** est $748,800***bit. road mix on stabil. paving and construct continuous steel beam bridge with concrete deck and creosoted timber substructure Bridge No. VI-278-73, 2.712 mi. S. R. 278, Vinton Co., to Charles S. Ratzlaff, N. Market St., McArthur, **$174,914** est. $208,200. Grand total $1,275,455. Bids 9/13. Awarded 9/13. CD 8/31.

O., Cleveland—City, L. J. Weil, purch. agt., City Hall, Lakeside and 6 Sts., grading, draining, paving, fencing and lawns, at Wade Seymour and Forest Hills, to Dominic Nero, 12202 Superior Ave., **$79,289.** Est. $82,000. J. C. Weinrich, city engr.

DRY SUBGRADES QUICKLY AT LOW COST...

MORETRENCH WELLPOINT SYSTEM

Send for a Moretrench estimate on your next dewatering job.

MORETRENCH CORPORATION
90 WEST ST., NEW YORK 6
CHICAGO, ILL. • TAMPA, FLA. • HOUSTON, TEX.

●Oklahoma—State Hy. Dpt., Oklahoma City, grading, drainage, minor structures 2.141 mi. on connection to U. S. 75, east of Bartlesville, Washington Co., to S. E. Evans Constr. Co., 2914 North O Sts., Fort Smith, Ark., **$99,802,** est. $126,310***grading, drainage, 2 bridges, 0.943 mi. county road east of Pine Creek, Grant Co., to E. E. Barber Constr. Co., 722 Wheeler St., Fort Smith, Ark., **$54,753,** est. $57,429*** traffic bound surf. 4.002 mi. county road east of Stringtown Atoka Co., to O. R. Gragg, Henryetta, **$70,483,** est. $68,427***c. conc. 2.94 mi. U. S. 183, south of Woodward, Woodward Co., to Ames Constr. Co., 1647 Exchange St., Oklahoma City, Zone 8, **$246,117,** est. $248,365 ***c. conc. 3.917 mi. 1 bridge, State Hy., 19 west of Lindsay, Garvin Co. and c. conc. 0.861 mi. State Hy. 19 at Alex, Grady Co., to Dahlgren & Brooks, Insurance Bldg., Oklahoma City, Zone 2, **$261,796,** est. $264,944 and **$57,901** est. $56,388 respectively***grading, drainage, minor structures 8.936 mi. State Hy. 41 east from Beckham Co. line, Wasbita Co., to W. D. Fulton Constr. Co., 2304 N. W. 28 St., Oklahoma City, Zone 6, **$90,169,** est. $113,839*** grading, drainage, minor structures, 8.108 mi. State Hy. 51, east of Hennessey, Kingfisher Co. to Elliott Bros., Perry, **$101,691,** est. $134,909***stabilized aggregate base double bit. surf. 5.771 mi. U. S. 59, south of Jay, Delaware Co., to Steinberg Constr. Co., Admiral Blvd., Tulsa, Zone 7, **$132,722,** est. $151,229*** double bit. surf. 4.331 mi. State Hy. 88 east of Claremore, Rogers Co. to Games Bros., Miami, **$231,373,** est. $249,448***c. conc. 2.005 mi U. S. 183, Frederick, Tillman Co., to Parks-Ward Co., 711 N. W. 38 St., Oklahoma City, Zone 5, **$293,573,** est. $293,611. Grand total $1,643,380. Bids 9/13, awarded 9/14.

South Carolina—State Hy. Dpt., Columbia, to W. A. Fuller & Sons, Barnwell, bit. surf. 8.952 mi. Road 22, S. C. Docket 31,236, Lee Co., **$73,697** ***to George Lokey Contg. Co., Augusta, Ga., bit. surf. 5.6 mi. Roads 111, 113, 43, 225, 227, 228, 229 and 177, S. C. Dockets 32,270, 32,297, etc., Lexington Co., **$59,891,** bit. surf. 9.358 mi. Roads 31 and 25, S-315 (1), Colleton Co., **$72,-007;** bit. surf. 6.655 mi. Road 25, S. C. Docket 18,257, Dorchester Co., **$60,737*****to Reeves Bros. Constr. Co., Inc., Easley, bit. surf. 5.942 mi. Roads 44 and 95, S-323 (1), Oconee Co., **$59,997*****to Ballenger Paving Co., Greenville, bit. surf. 13.715 mi. Road 4, S-73 (2), Berkeley Co., **$183,349*****to E. H. Hines Constr. Co., Greenwood, bit. surf. 8.538 mi. Roads 38, 14 and 20, S. C. Dockets 22,247, etc., Georgetown Co., **$92,176.** Grand total $601,804. Bids 9/13. CD 9/1.

Tex., Athens — Henderson Co., Courthouse, Road Proj. 17-A, asph. surf. road from La Rue to 4½ mi. northeast of here, to E. La Rue, Crocket, **$67,731,** Est. $66,000. Bids 6/13. CD 6/1.

Tex., Corpus Christi—Nueces Co., Courthouse, Precinct 1, 8 mi. road reconstr. and surf., **$55,000;** Precinct 2, 9 mi. road recontr. and surf., drainage, **$96,000;** Precinct 3, 7 mi. road reconstr., surf. Approx. **$60,000;** Precinct 4, 10 mi. road reconstr., surf., drainage, **$85,000.** Owner builds. Grand total $296,000. J. R. Laurence, co. engr.

Tex., Dallas—Roland Pelt, 2215 Lawndale St., street constr. and asph. paving on 95½ acre tract, to Crown Constr. Co., 1911 S. Westmoreland St. Approx. **$95,000.**

Tex., Houston — Southern Builders Inc., Greenway Park, 1200 Givens St., concrete street paving. Owner builds **$55,000.**

Tex., Houston—Wright Land Co., 1st National Bank Bldg., grading, shelling streets, drainage, on 76.49 acre plot, Owner builds, **$55,000.**

Tex., Port Lavaca and Fort Point—Calhoun Development Co., Port Lavaca, c. conc. street paving, to Thomas Bate & Sons, 1107 Girard St., Houston, **$68,000,** Watt C. Hedrick, 5201 Fannin St., Houston, engr.

Tex., Wharton—Wharton Co., Courthouse, Precinct 1, all-weather paving of grav., asph., shell, **$89,000;** Precinct 2, 11 mi. all-weather paving of grav., asph., shell, **$116,000;** Precinct 3, 9 mi. all-weather grav., asph., shell paving, **$90,000;** Precinct 4, 13½ mi. all-weather paving, grav., asph., shell, **$136,000.** Purchase and Hire. Grand total $431,000. CD 11/8.

†Utah—Bureau Pub. Roads, General Services Admin., 4753 Federal Bldg., Ogden, graded and gravel surfaced Provo-River-Haydens Fork Forest roadway in Wasatch National Forest, Utah Forest Hy. Proj. 34-B, Summit Co., to Olof Nelson, Logan, **$201,041.** Est. $224,766. Bids 8/31.

EARTHWORK, WATERWAYS

BIDS ASKED

October 11

†Ohio—U. S. Eng., Niagara and Bridge Sts., Buffalo, New York, maintenance dredging Cleveland Harbor and river entrances approx. 100,000 cu. yd. removal and disposal of shoals, $80,000.

October 11

†Oregon—Bureau Reclamation, Dpt. Interior, Bend, Northwest Unit Pipe Line, Grants Pass Irrigation Dist., Deschutes Proj., Grants Pass, Spec. R1-55.

LOW BIDDERS

†Alabama—U. S. Eng., P. O. Box 1169, Mobile, Zone 7, Sept. 13, dredging 3,100,000 cu. yd. Mobile Harbor, Serial No. CIVENG-01-076-40-12, from Standard Dredging Corp., Whitney Bldg., New Orleans, La., **$153,760.** CD 8/24.

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, Zone 9, Sept. 8, fabricating, installing sector gates, Calcasieu Lock, Calcasieu Parish, Serial No. CIVENG-16-047-50-36, from Consolidated Western Steel Corp., P. O. Box 341, Orange, Tex., **$103,676.** Est. $121,850. CD 8/15.

†Maryland—U. S. Eng., 1 and Douglas Sts. N.W., Wash. 25, D. C., Sept. 15, maintenance dredging Potomac River, Upper Smith and Lower Smith-Maryland Points, Serial No. CIVENG-49-080-50-17, from Norfolk Dredging Co., Campostella Wharf, Norfolk, Va., **$69,655.** CD 8/24.

†Nebraska—U. S. Eng., 1709 Jackson St., Omaha, Sept. 15, agricultural levee, near Brownsville, Inv. 33, from De Voss Bros., Wolbach, **$298,718.** Est. $270,567. CD 8/23.

†Pennsylvania—U. S. Eng., 121 N. Broad St., Phila., Zone 1, Sept. 14, 545,000 cu. yd. maintenance dredging at Port Richmond Anchorage and adjacent channel areas in Delaware River, Philadelphia Harbor, opposite Petty Island, approx. 2½ mi. upstream from the Philadelphia-Camden Bridge across Delaware River at Phila., Inv. No. CIVENG-36-109-150-13, from American Dredging Co., 12 S. 12 St., Phila., **$210,915.** CD 9/1.

CONTRACTS AWARDED

†Pa., Wilkes-Barre—U. S. Eng., P. O. Box 1715, Baltimore 3, Md., Sept. 16, levee raising, Luzerne Co., Serial No. CIVENG-18-020-50-3, to Wagner Constr. Co., 115 S. Wyoming Ave., Kingston, **$51,798.** Est. $49,454. Bids 9/16. CD 8/22.

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, reservoir clearing, 2nd contract, Dam 6 Neches River Basin, to Farnsworth & Chambers Co., Inc., P. O. Box 74, Houston, **$246,000.** Est. $50,000. Bids 7/21. CD 7/27, under LB.

Tex., Corpus Christi — Nueces Navigation Dist., Navigation and Canal Comrs., P. O. Box 1541, strengthening earthen levee, along north side Barge Canal extens., to Lee Aikin, Airport Rd., **$30,162.** Est. $35,000. Bids 7/30. CD 7/13.

†Utah—Bureau Reclamation, Dpt. Interior, Provo, pipelines, structures and reservoirs for Laterals 13 and 17, South Ogden Dist. System of Ogden River Proj., Spec. 2745, to Wheelwright Constr. Co., P. O. Box 109, Ogden, **$118,778.** Bids 8/24. CD 7/27.

AIRPORTS AND AIRBASES

BIDS ASKED

October 13

†Fla., Eglin Field—GROUND CONTROL SYSTEM FACILITIES—U. S. Eng., 2301 Grant St., Mobile, Ala., ground control approach sys. facilities, Eglin Air Force Base, Serial No. Eng-01-076-50-11.

La., Shreveport—AIRPORT IMPRVS.—City, City Hall, 1st unit clearing, grubbing, grading, drainage and runways, at airport. CD 5/9.

LOW BIDDERS

Pa., Phila.—APRON—Phila. Dpt. P. Wks., City Hall Annex, Sept. 16, cargo apron and taxiway, International Airport, from Union Paving Co., Broad and Stiles Sts., **$417,958,** Est. $490,000. CD 9/7.

Tex., Dallas—RUNWAY—City, Earl Goforth, secy., City Hall, Main and Harwood Sts., Sept. 13, Northwest-Southeast Runway extens., Hensley Field, from Holland Page, Georgetown Hy., Austin, **$432,252,** Est. $750,000. CD 9/2.

PUBLIC BUILDINGS

BIDS ASKED

October 6

Ala., Anniston—SCHOOLS—Calhoun Co. Bd. Educ., Anniston, 6 schools, imprvs. and addns., $800,000.

S. C., Clover—HIGH SCHOOL—York County School Dist. 39, Clover, high school. Approx. $400,000. Plans deposit $25. William G. Lyles, Hiseet, Carlisle & Wolff, 1302 Main St., Columbia, archts. CD 9/12, under S. C., York.

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., 25 classroom, masonry type school (Aldine-Westfield Rd. Area), $600,000. Extended date. Ernest L. Shult, 5609 Fannin St., archt. Stayton Nunn, 2425 Ralph St., co-ord. archt. W. P. Moore, 4605 Montrose St., engr. and Ray L. Jenkins, 4316 Blossom Ave., mech. engr. CD 9/15.

†Wyoming—GARAGE, etc.—Bureau Reclamation, Dpt. Interior, Region 7, New Customhouse, Denver, Colo., steel garage and machine shop at Casper, Missouri River Basin, Wyo., Spec. R-7-84 (Region 7). Extended date. L. N. Mc Clellan, ch. engr. CD 8/31.

October 10

Ill., Maplewood (East St. Louis, P. O.)—SCHOOL—School Dist. 187, St. Clair Co., c/o Bd. Educ., Harold Anglim, secy., 2 story, bsmnt., brick, rein.-con. Cahokia Commonsfield High School. Extended date. Charles B. Spencer, Chemical Bldg., 721 Olive St., St. Louis, Zone 1, Mo., archt. Altman-Goldenberg & Assoc., Metropolitan Bldg., East St. Louis, engrs. CD 8/25.

Tenn., Memphis — SCHOOL — Shelby Co., Memphis, school, $500,000. Plans deposit $25. J. Frazier Smith, Goodwyn Institute, archt.

Kan., Kansas City—BUILDING—State of Kansas, State House, Topeka, Eaton Bldg.

addn., clinic bldg. addn., University of Kansas Medical College, $476,395. Charles Marshall, State House, Topeka, state archt. CD 4/20.

N. Y., Brooklyn—SCHOOL—Supt. School Buildings, Design & Constr., 49 Flatbush Ave. exten., Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical and lighting fixtures for new P. S. 249, Caton Ave., Marlborough and Rugby Rds. Plans deposit $40 general contract, $7 plumbing and drainage, heating and ventilating each; $5 electrical work and lighting fixtures. CD 1/29/43.

Ore., Portland—FIRE STATION—City, City Hall, 3 story, concrete, steel central fire station with 6 story tower and bsmnt., $600,000. Plans deposit $50. Jones & Marsh, Concord Bldg., archts.

†**Wyoming**—SUBSTATION—Bureau Reclamation, Dpt. Interior, Casper, Lusk substation, Transmission Div., Missouri River Basin Proj., Spec. 2793. L. N. Mc Clellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

LOW BIDDERS

Conn., Woodbury — SCHOOL — Town of Woodbury, Bd. Educ., Woodbury, Aug. 31, brick school addn., from Frank P. Kelley, 1543 Baldwin St., Waterbury, **$299,739.**

D. C., Wash.—SCHOOL—Dist. Comrs., District Bldg., Sept. 20, Oxon Run School, 4 St. and Mississippi Ave. S.E., from George Hyman Constr. Co., 1010 Vermont Ave N.W., **$649,000.** CD 9/9.

●†**Md., Baltimore**—HOSPITAL—U. S. Eng., P. O. Box 1715 24 St. and Maryland Ave., Baltimore, Zone 3, Sept. 20, general contract veterans administration hospital, quarters service bldgs. and utilities, from Consolidated Eng. Co. Inc., 20 E. Franklin St., **$4,879,000.** CD 8/1.

N. Y., Brooklyn—BUS GARAGE—Bd. Transportation, 250 Hudson St., New York, Zone 13, Sept. 9, general contract, 37th Street Bus Garage alterations, addns., 37 St. and 1st Ave., Contr. MW-108-1, from Atlas Tile & Marble Works, Inc., 238 E. 26 St., New York, Zone 10, **$115,125.** CD 8/29.

●**N. Y., Ithaca**—LIBRARY, etc.—Dpt. P. Wks., State Office Bldg., Albany, Sept. 21, general contract agricultural library and classroom bldg., at New York State College of Agriculture, Cornell University, from John W. Cowper Co., Inc., Sidway Bldg, Buffalo, **$2,536,365.** CD 9/13.

●**N. Y., New York**—HOUSING—New York City Housing Auth., 63 Park Row, Zone 7, Sept. 20, general contract Sect. I, Bldgs. 5, 6, 7 and 8 of Melrose Houses bounded by E. 153 St., Morris Ave., E. 156 St. and irregular line approx. midway between Morris and Courtland Aves., Bronx Boro, from John A. Johnson & Sons, Inc., 268 41 St., Brooklyn, Zone 32, **$2,772,000*****heating and ventilating, from Raisler Corp., 129 Amsterdam Ave., New York, Zone 23, **$317,700*****plumbing, from Wachtell Plumbing Co., 1345 Cromwell Ave., New York, Zone 52, **$340,000.** CD 8/24.

N. Y., Poughkeepsie — POWER PLANT — Bureau Contracts & Supplies, Albany, Sept. 21, heating work for addnl. power plant facilities Power House Bldg. 33, Hudson River State Hospital, from P. R. Matthews Co., Inc., 1412 Parker St., New York, Zone 61, **$419,900.** CD 7/11/45.

†**Oregon**—RESIDENCES, etc.—U. S. Eng., 628 Pittock Block, Portland, Zone 5, cancelled bids to have been opened Sept. 6, construct 15 permanent residences, incl. utilities, Detroit Dam Permanent Housing Area, Willamette River Basin, North Santiam River, CIVENG-35-026-50-52. CD 8/11.

●**Ore., Salem**—OFFICE—State Hy. Comn., State Office Bldg., Sept. 20, 5 story, bsmnt. office, from Ralph & Horowitz, 835 N. Flint St., Portland, **$1,934,264.** Est. $1,700,000. CD 8/24.

Tex., El Paso — AUDITORIUM, etc. — Bd. Regents University of Texas (Dudley K. Woodward, Jr.) Austin, Sept. 17, 2 story, auditorium and 3 story science bldg., stone walls, etc., concrete pier and beam fdn., from Robert E. Mc Kee, 1918 Texas St., El Paso, **$833,700.**

●**Va., Charlottesville**—DORMITORY—State of Virginia, Richmond, Sept. 16, mens dormitory, Group 1 to 10, Observatory Rd., University of Virginia, from Charles M. Barger & Sons, Lexington, **$2,071,722.** Alternate **$503,520.** Est. $2,071,722. CD 8/17.

CONTRACTS AWARDED

Minn., Worthington—SHOP—Nobles Co., W. C. Thom, and Worthington, general contract 1 story, maintenance shop, to Hudson Bros., Worthington, **$76,900.** Bids 9/6. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts. CD 8/25.

O., Willoughby—HIGH SCHOOL—Willoughby Twp. School Dist., J. T. Smith, Union High School Bldg., 2 story, 179x283 ft., brick, steel Junior High School, to Nels F. Widing, 614 E. 266 St., Euclid, **$430,639.** Bids 9/8. CD 8/23.

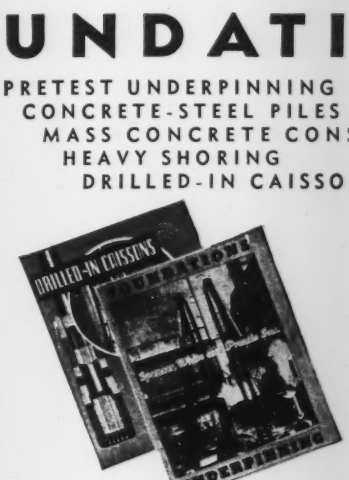
Ore., Lyle—SCHOOL—School Dist. 2, Dallas, 146x208 ft., frame school and gymnasium, to Barham Bros., 865 N. Winter St., Salem, **$253,990.** Est. $250,000. Bids 7/7. CD 6/24.

Pa., Brookline—SCHOOL—Haverford Twp. School Dist., Brookline, school, Lynwood Park, to Edwin E. Hollenback Jr., 554S Chestnut St., Phila., **$632,303.** Davis, Dunlap & Carver, 1717 Sansom St., Phila., archts. CD 4/26.

S. D., Pierre—OFFICE—State, Pierre, 3 story, 48x210 ft. state office, to Henry Hackett & Sons, Rapid City, **$315,500.** Bids 9/15. CD 9/1.

FOUNDATIONS

PRETEST UNDERPINNING
CONCRETE-STEEL PILES
MASS CONCRETE CONSTRUCTION
HEAVY SHORING
DRILLED-IN CAISSONS



Send for catalogs descriptive of the latest foundation types and methods

SPENCER, WHITE & PRENTIS, INC.
10 EAST 40th ST. NEW YORK 16, N. Y.
602 HAMMOND BLDG. DETROIT 26, MICH.

DRILLING CONTRACTORS

DIAMOND AND SHOT CORE BORINGS—DRY SAMPLE BORINGS

Foundation Testing for Bridges, Dams and all Heavy Structures

Also

Manufacturers of Diamond and Shot Core Drills, Accessories and Equipment

SPRAGUE & HENWOOD, Inc.
Scranton, Pa. Dept. E, U. S. A.

GUNITE

PNEUMATICALLY PLACED CONCRETE
DENSE · DURABLE · HIGH STRENGTH

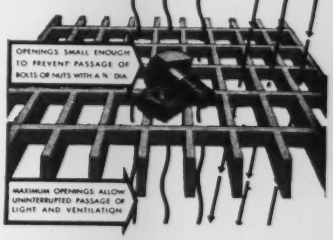
for

Restoring Disintegrated Concrete
Dam, Dock and Bridge Repairs
Steel Encasement and Fireproofing
Sewer, Water Pipe and Penstock Linings
Stack and Bunker Linings
Wood Pile Casings—Pressure Grouting
Prestressed Tanks and Silos

Get in touch with us for engineering data and estimates

GUNITE CONSTRUCTION CORPORATION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
MURRAY HILL 3-7699

Tri-Lok RECTANGULAR OPEN STEEL FLOORING


OPENINGS SMALL ENOUGH TO PREVENT PASSAGE OF BOLTS OR NUTS WITH A ¾" DIA.
MAXIMUM OPENINGS ALLOW UNINTERRUPTED PASSAGE OF LIGHT AND VENTILATION

Tri-Lok strength is obtained by truss action through twisted cross-bar, curved in opposite directions at each bearing-bar. Standard openings in Tri-Lok Rectangular Steel Flooring are 1" x 3 7/8"—other size openings can be supplied as required.

Diagonal, or Super-Safety U-type Flooring, and stair treads of all types, are available. Bulletin KC 1140 describes the construction features of Tri-Lok Open Steel Flooring.

DRAVO CORPORATION
National Distributor for the Tri-Lok Company
Dravo Bldg., Pittsburgh 22, Pa.
Sales Representatives in Principal Cities

Tenn., Memphis—SCHOOL—Shelby Co. Bd. Educ., Courthouse, Whitehaven School, to Sam P. Maury Constr. Co., 554 Adams Ave., **$395,995.** Bids 9/8.

Tex., El Paso — AUDITORIUM, etc. — Bd. Regents University of Texas (Dudley K. Woodward, Jr.), Austin, 2 story auditorium and 3 story science bldg., concrete pier and beam fdn., stone walls, etc., for Texas Western College, to Robert E. McKee, 1918 Texas St., **$833,700.** Bids 9/17. CD 9/22, under LB.

Tex., Stinnett—SCHOOL—Stinnett Bd. Educ., c/o Stinnett Independent School Dist., Stinnett, high school, to Niel Singleton, Amarillo, **$259,700.** Bids 9/2. CD 8/29.

Ont., Burks Falls—SCHOOL—High School Bd., Burks Falls, S. O. Dukelaw, secy., 1 story, 67'x233 ft., concrete, steel high school, to Pilkey-Noble Constr Co., Ltd., 24 Gore St., Hamilton. Approx. **$250,000.** Bids 8/30 F. W. Warren, 7 Hughson St. S., Hamilton, archt. CD 8/16.

●**Ont., Guelph**—HOSPITAL—General Hospital Comm., G. E. Robertson, chn., Guelph, 5 story, 4 story wings, concrete brick hospital, to Pigott Contr. Co. Ltd., Pigott Bldg., Hamilton. Approx. **$1,424,000.** Bids 9/1. CD 8/9.

Ont., Kenora—SCHOOL—Kenora Keewatin Dist. High School Bd. H. Thomas, secy., 2 story, part bsmnt., 141x157 ft., concrete, steel, brick high school addn., to Hill-Clark-Francis Ltd., Whitewood Ave., New Liskeard. Approx. **$361,000.** Shore & Moffott, 79 Queen St. E., Toronto, archts. Bids 8/15. CD 7/21.

COMMERCIAL BUILDINGS

BIDS ASKED

October 11

Ga., Rome—SUNDAY SCHOOL, etc.—Fifth Avenue Baptist Church, Rome, 3 story, 45x135 ft., brick, hollow tile Sunday school classroom bldg. Plans deposit $25. Bothwell & Nash, 207 Roswell St., Marietta, archts.

Miss., Hattiesburg — CHURCH — Immanuel Baptist Church, c/o Heavon & McCleskey, archts., 101 Short St., 3 story, 44x100 ft., brick, steel, concrete church.

N. C., Goldsboro—HEADQUARTERS—Tri-County Electric Membership Corp., Goldsboro, headquarters bldg. Plans deposit $25. L. E. Wooten & Co., Capitol Club Bldg., and Holloway, Weber & Reeves, 1916½ Hillsboro St., Raleigh, engrs. CD 7/9/48, under Unclassified.

SOON LETS CONTRACT

Conn., Westport—SCHOOL—Church of the Assumption, Rev. John H. Landry, pastor, soon lets contract 2 story, 65x120 ft. brick, steel parochial school with 1 story, 60x155 ft. wing. Riverside and Burr Aves. $475,000. Oliver Reagan, 77 Evergreen Ave., Westport, archt. CD 9/2.

Ill., Bellwood—EDUCATIONAL—St. Simeons Parish, Bellwood, soon lets contract 2 story, brick, concrete, steel, stone educational bldg. Nairne W. Fisher, 79 W. Monroe St., Chicago, archt.

O., Cleveland—CONVENT, etc.—St. Timothy's Roman Catholic Church, 4309 E. 131 St., soon lets contract stone, brick, steel convent and rectory, $300,000. Edward P. Graham, 171 Newbury St., Boston, Mass., archt.

Pa., Bala Cynwyd—STORE—J. R. Van Scriver Co., Market St., Camden, N. J., soon lets contract furniture store, $1,000,000. Extended date. H. F. Everett & Assoc., 512 Hamilton St., Allentown, archts. CD 8/21.

●**Pa., Pittsburgh**—NURSES HOME, etc.—University of Pittsburgh, Forbes St., soon lets contract 14 story, brick, steel, stone nurses home and training school, Lathrop St. $4,-050,000. Ingham, Boyd & Pratt, 1211 Empire Bldg., archt.

Pa., Sewickley—SCHOOL—Sewickley Academy, Sewickley, soon lets contract 3 story, 52x86 ft., brick, tile, steel school addn, $250,-000. Ingham, Boyd & Pratt, Empire Bldg., Pittsburgh, archts. CD 3/9.

LOW BIDDERS

Pa., Bedford—HOSPITAL—Bedford County Memorial Hospital, Bedford, Sept. 7, brick, steel irregular shape hospital, form Moyer Bros., 2605 Beale Ave., Altoona, **$636,311.** CD 9/1.

Tex., Corpus Christi — DIAL, etc. — Southwestern Bell Telephone Co., 822 Rosenberg St., Sept. 12, 2 story, bsmt., dial, incl. electric power plant and heating plant in bsmnt. from E. Eisenhauer, 1124 Tancahua St., **$259,000.**

CONTRACTS AWARDED

●**Calif., Corte Madera**—RESIDENCES—Billings & Rentz Co., 200 Masonic Ave., San Francisco, 550 one story frame residences to United Housing Co., 200 Masonic Ave., San Francisco. Approx. **$5,000,000.** Punnett-Parez & Hutchinson, 58 Sutter St., San Francisco, engrs.

Conn., Manchester — HOUSING — Cottage Homes, Inc., 5 Dover Rd., 35 single frame dwellings, Fulton Rd., Hendee Rd. and Adams St. Owner builds. **$315,000.**

Conn., Stamford — APARTMENTS — Sylvan Knoll Apartments, Inc., P. O. Box 6, Norton Heights, 2 story, brick veneer garden type apartments, asbestos siding, Seaside Ave., to Arthur Olson, Inc., Glenbrook Rd., Norton Heights. Approx. **$500,000.** Marvin H. Clapp, 400 E. 49th St., New York, N. Y., archt.

Fla., Jacksonville — TEMPLE — Ahavath Chesed Congregation, Church Bldg., stone, masonry jewish temple educational and recreational bldgs St. Johns Ave. and Mallory Sts., to S. S. Jacobs & Co., Hildebrandt Bldg. Approx. **$350,000.** Awarded 9/16. Kemp, Bunch, & Jackson, Florida Theatre Bldg., Zone 2, archts.

Fla., Jacksonville—DWELLINGS—Lawrence A. Pearce Co., 1201 Kings Ave., Zone 7, 66 family dwellings in Arlington suburb, Owner builds, **$475,000.**

Fla., Jacksonville — DWELLINGS — Walter Crabtree Co., Barnett Bldg., Zone 1, 50 family dwellings at Lakewood suburb, Owner builds, **$379,000.**

Fla., Miami—APARTMENT UNITS—Sandpiper Villas Apartments, c/o contractor, 60 apartment units, to City Constr. Corp., 150 N.W. 73 St. Approx. **$300,000.** CD 6/10.

La., Bossier City—HOUSING—Madden & Larkin, Bossier City, 103 homes. Owner builds. Approx. **$500,000.**

●**La., New Orleans**—HOUSING—Emile Haik, 822 Perdido St., 321 homes. Owner builds Approx. **$2,500,000.** Rene F. Gelpi, 318 Carondelet St., archt.

La., New Orleans—HOUSING—Jones Bros., 2138 Jefferson Highway, 63 homes. Owner builds, **$750,000.**

●**N. J., Trenton**—RESIDENTIAL DEVELOPMENT—Ready Bilt Homes, Inc., 1030 New York Ave., 300 unit residential development Ewing Twp., separate contracts. **$2,100,000.** W. Henry Neubeck, 200 Pingree Ave., archt. Trenton Eng. Co., 143 E State St., engr.

●**N. Y., New York**—OFFICE—Tishman Realty & Constr. Co., 445 Park Ave., 21 story office, Avenue of Americas and 44 St. Owner builds. Approx. **$1,500,000.** Shreve, Lamb & Lichtenstein, 369 Lexington Ave., Zone 17, archts.

●**O., Portsmouth**—HOSPITAL—Mercy Hospital, c/o Sisters of the Third Order of St. Francis, Portsmouth, general contract 5 story, 53x150 ft., rein.-con. hospital addn. and 71x95 ft. power and laundry bldg., to B. G. Danis Co., Inc., 1 W. First St., Dayton, Zone 3, Approx. **$1,000,000.** Bids 8/31. CD 8/31.

●**Pa., Crafton** — APARTMENT — Crafton Ingram Arms, Inc., Box 5694, Pittsburgh, 12 two story, 133x133 ft., brick, tile apartments to United Constr Co., Box 5094, Pittsburgh, Approx. **$1,700,000.** Phillip Friedman, 121 S. Nelgey Ave., Pittsburgh, archt.

Pa., Erie—NURSES HOME—St. Vincents Hospital, 2420 Sassafras St., 5 and 6 story, 39x73 ft. L-shaped, irregular, brick nurses home addn., W. 24 St., to H. Platt Co., 1104 Selinger Ave. Approx. **$450,000.** Johnson & Assoc., 821 Commerce Bldg., archts.

Pa., Phila. — HOUSING — Boardman Smith Corp., 1322 W. Airdrie St., residential development, K St. and Claridge Sts., separate contracts, **$840,000.** I. W. Levin, 1531 Belmont Ave., archt.

●**Pa., Phila.** — HOUSING — Gowen-Williams Corp., 100 Rockland St., 1,000 units residential development, Williams St. between Gowen and Roumfort Sts., separate contracts, **$8,000,000.**

Pa., Pittsburgh — APARTMENT — 240 Melwood, Inc., Plaza Bldg., 6 story, bsmnt., L-shaped, 86x84 ft., brick, block apartment, Melwood St., to Mike Leebov, Plaza Bldg., 5 Ave., Approx. **$500,000.** Phillip Friedman, 121 S. Negley Ave., archt.

Tex., Houston—DWELLINGS—Rottersmann Builders, Inc., 5118 Laurel St., 55 dwellings in southeast section of city, Owner builds, **$450,000.** CD 9/13.

INDUSTRIAL BUILDINGS

BIDS ASKED

Ill., Chicago—PLANT—United States Brewing Co., 2515 N. Elston St., Zone 14, 2 story, bsmnt., steel, brick concrete bottling plant addn. $300,000. Paul F. Griffenhagen, 333 N. Michigan St., Zone 1, structural engr. George L. Lehle, 4554 N. Broadway, Zone 40, consult. engr.

●**Tex., Longview** — PLANT — East Texas Electric Steel Co., c/o Roy A. Hearne, exec. dir., Longview, commercial sponge iron plant, $1,000,000.

SOON LETS CONTRACT

Tex., Houston — SHOP — Baird, Perkins & Greer, c/o Lamar Q. Cato, archt., 2103 Crawford St., soon lets contract shop, $70,000. Robert J. Cummins and Taylor Milton, Bankers Mortgage Bldg., engrs.

Pa., Latrobe — GARAGE — Smith Chevrolet Co., Latrobe, soon lets contract 1 story, 106x130 ft., brick, block, steel garage, $100,000. Thomas Piatt, 628 E. 11 Ave., Munhall, archt.

LOW BIDDERS

S. D., Milbank—GARAGE—Whetstone Valley Electric Co-operative, Milbank, Sept. 12, general contract garage and service bldg. for electrical distr. sys. from Hurley Constr. Co., 403 S. Robert St. St. Paul, Minn., **$69,500.** CD 5/16, under Unclassified.

Tex., Fort Worth — SHOP — Beard & Stone Electric Co., c/o Wilson & Patterson, archts., Majestic Bldg., Sept. 14, generator service shop, from Ramdo Constr. Co., c/o archts., **$140,763.** CD 9/9.

Tex., Houston—GARAGE, etc.—Continental Bus Center, 300 Travis St., repair garage and shop, from Robert H. Smith Constr. Co., 2301 Telephone Rd., **$68,740.** Hucker & Jones, Amarillo, archts.

CONTRACTS AWARDED

Ala., Opelika—PLANT—Pepperell Mfg. Co., Opelika, mfg. plant addn., to Batson-Cook Co., West Point. Approx. **$100,000.**

Calif., Fortuna—MILL—Clay Brown & Co., Pittock Block, Portland, Ore., saw mill. Owner builds. **$350,000.**

●**Del., Seaford**—PLANT—E. I. du Pont de Nemours & Co., Inc. ,Nemours Bldg., Wilmington, nylon plant, separate contracts, **$3,500,000.** CD 5/27

Fla., Lake Wales—FACTORY—Florida Fiber Box Co., Sarasota, corrugated, heavy paper box factory. Owner builds. **$250,000.**

Ia., Sioux City—PLANT—Continental Baking Co., Inc., 903 Grandview Blvd., baking plant, to W. A Klinger Co., Benson Bldg., **$70,000.** Bids 8/30. William Beuttler, Insurance Exchange Bldg., archt.

Miss., Biloxi — TERMINAL — Teche Greyhound Lines, c/o contractor, bus terminal, to Brice Building Co., 130 S. 13 St., Birmingham, Ala., Approx. **$75,000.** CD 9/7.

Mo., St Louis — FACTORY — American Fixture & Mfg. Co., 2300 Locust St., Zone 3, 1 story, 66x252 ft. brick, steel, concrete factory addn., 4333 Semple Ave., to L. O. Stocker Co., 3826 Lindell Blvd., Zone 8.

Neb., Elkhorn—PLANT—Omaha Cold Storage Co., 8 and Farnam Sts., Omaha, converting warehouse into plant, to G. E. Morrison Constr. Co., 4544 Charles St., Omaha. Approx. **$100,000.**

O., Lima—ELEVATOR—Pillsbury Mills, Inc., Pillsbury Bldg., Minneapolis, Minn., concrete grain elevator, incl. drier and 16 main bins with 500,000 bu. capacity, to Jones-Hettelsater Constr. Co., 1911 Baltimore St., Kansas City, Mo.

Ore., Portland—PLANT—Pennsylvania Salt Co., 6400 N.W. Front St., design and construction 80x150 ft. steel, concrete salt processing plant addn., to Roy T. Earley Co., 321 Middle Waterway, Tacoma, Wash., **$120,000.** Awarded 9/7. C. R. Duffie, 6400 N.W. Front St., engr.

Pa., Collegeville—FACTORY—Superior Tube Co., Collegeville, factory alterations, to Benjamin Lessner Co., Inc., 17 and Cambria Sts., Phila., **$70,000.** Mahony Troast Constr. Co., 657 Main Ave., Passaic, N. J., engrs. CD 1/27.

Pa., McKeesport — GARAGE — Palmers Garage, Inc., 323 Olive Ave., brick, block, steel garage, Market and 7 Sts., to Fritz Hammerbura, 1425 Ohio Ave. Approx. **$100,000.** Palmgreen, Patterson & Fleming, 429 - 4 Ave., Pittsburgh, archts.

Pa., Pittsburgh — STOCK HOUSE — Pittsburgh Brewing Co., 3340 Liberty Ave., 1 story, bsmnt., steel stock house, to Helvenston Constr. Co., P. O. Box 415. Approx. **$325,000.** Bids 9/12. CD 9/2.

Tenn., Knoxville — BOILER PLANT — Fort Sanders Hospital, c/o contractor, boiler plant, to Roehl Constr. Co., 625 Atchley St., **$71,588.**

Tenn., Nashville — GARAGE — Maxey & Donnelly, c/o contractor, garage, to Betson & Williams, 328 Murphy Bldg., Approx. **$76,000.**

●**Tex., La Porte**—PLANT—E. I. du Pont de Nemours & Co., c/o Tom Ferguson, La Porte, chemical plant unit, to H. K. Ferguson Co., M. & M. Bldg., Houston, **$1,250,000.** Est. $1,000,000. CD 2/13/47.

Tex., San Saba—AUTO SERVICE and SHOP —Jim Circle Motor Co., San Saba, auto service and shop, to Williams Constr. Co., Goldthwaite. Approx. **$72,000.**

Tex., Waco—WAREHOUSE—General Tire & Rubber Co., Waco, remodeling portion war plant into warehouse, to Johnson Constr. Co., Amicable Bldg. Approx. **$75,000.**

Tex., Waskom—PLANT—Arkansas-Louisiana Gas Co., Slattery Bldg., Shreveport, La., 50,-000,000 cu. ft. daily gas plant expansion. Owner builds. **$375,000.** CD 10/13/48.

Tex., West—MILL—R. D. Hughes Industries, Inc. 1812 Main St., Dallas, reconditioning, expanding cotton textile mill. Owner builds. Approx. **$100,000.** CD 5/17.

UNCLASSIFIED

BIDS ASKED

October 5

Que., Sorel—DOCK—J. M. Somerville, secy., c/o Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., repairs, imprvs. Dock 2, Approx. $75,000. Plans deposit $10. R. Bois c/o owner, engr.

October 7

N. Y., New York—D. C. CONNECTIONS—Bd. Transportation, 250 Hudson St., Zone 17, furnishing, installing D. C. connections, track bonding and associated work for Pelham Line, Hunts Point Ave. to Pelham Bay Park, Bronx Boro. CD 3/3/44.

Bids Asked

●**Arkansas**—GAS PIPELINE—Arkansas-Louisiana Gas Co., Slattery Bldg., Shreveport, La., 91 mi. 20 in. welded joint natural gas pipeline between Magnolia area and Perla, **$3,-500,000.** CD 4/21.

●**Texas and Arkansas**—GAS PIPELINE—Arkansas-Louisiana Gas Co., Slattery Bldg., Shreveport, La., 72 mi. 20 in. welded joint natural gas pipeline between Marshall Tex. and point in Columbus Co., Ark. $2,700,000. CD 4/21.

LOW BIDDERS

†Ala., Tuskogee—STEAM DISTR. SYSTEM—Veterans Admin., Vermont Ave. between H and I Sts., N.W., Wash., 25 D. C., Sept. 20, outside steam distr. sys. for Veterans Hospital, Spec. 4928, from Whaley Co., Inc., 6424 1 Ave. N., Birmingham, **$208,903.** CD 8/12.

†Colorado—TRANSMISSION LINES—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Sept. 13, Flatiron-Longmont-Leyner 115-kv transmission line, Colorado-Big Thompson Proj., Spec. 2725, combination bid Schedule 1 and 4, aluminum conductor from J & J Constr. Co., First National Bldg., Oklahoma City, Okla., **$297,767.** CD 9/7.

Missouri—RURAL DISTRIBUTION LINES—Southwest Electric Co-operative, Robert H. Cochran, mgr., Bolivar, received no bids Sept. 15, 488 mi. rural distr. lines, Benton, Camden, Dallas, Greene, Hickory and Polk Counties, Frank Horton & Co., Lamar, engrs. CD 8/29.

Oklahoma—RURAL DISTRIBUTION LINES—Northeast Oklahoma Electric Co-operative, Vinita, 410 mi. rural distr. lines, Craig Co., from J. & J. Constr. Co., First Natl. Bldg., Oklahoma City, Zone 2, **$364,670.** Est. $350,000. CD 6/4/48.

Tex., Austin—LIGHTING SYSTEM, etc.—University of Texas, c/o Bd. Regents, Austin, electric lighting sys. and steam distr. sys. in University Zone, from Joe Bland Constr. Co., P. O. Box 1158, **$56,665** and **$52,225** respectively. CD 8/22.

CONTRACTS AWARDED

Ill., Carmi—DRIVE-IN THEATRE—Corporation formed by S. R. Stanley, Crossville, Herbert W. Newcomb, Carmi, and Bertis B. Williams, Enfield, drive-in theatre, 10 acre tract C. S. 469, 1 mi. east of here, separate contracts. Approx. **$75,000.**

Ind., Brazil—DRIVE-IN THEATRE—Walter Campbell & Gilbert E. Ogle, State Rt. 43, south of Midway crossing, Brazil, drive-in theatre, 19 acre tract State Rds. 40 and 43, approx. 17 mi. east of here, separate contracts. Approx. **$75,000.**

Kan., Wellington—DRIVE-IN THEATRE—Sol Frank & Assoc., c/o Trail Drive-In, Pratt, drive-in theatre, known as Trail Drive-In, Rt. 160, east of here, separate contracts. Approx. **$80,000.**

Ky., Cynthiana — DRIVE-IN THEATRE — Carl Shirley & Sons, Cynthiana, drive-in theatre, Falmouth Pike, U. S. 27, 1 mi. north of here, separate contracts. Approx. **$60,000.**

Ky., Hazard—DRIVE-IN THEATRE—J. C. Amusement Co., c/o Engene H. Combs and Richard M. Johnson, Hazard, Glen-Vu drive-in theatre, Combs Rd. 3.5 mi. northwest of city, separate contracts. Approx. **$60,000.**

Mo., Chillicothe — DRIVE-IN THEATRE — Merle Jones & Angelo Saccano, Chillicothe, drive-in theatre, U. S. No. 66 on 14 acre plot approx. 1.5 mi. north of city, separate contracts. Approx. **$50,000.**

Mo., Nevada — DRIVE-IN THEATRE — Mo-Kan Drive-In c/o Chet Borg, 1717 Wyandotte St., Kansas City, Mo., drive-in theatre, Rt. 54, 4 mi. west of here, separate contracts. Approx. **$60,000.**

†N. M., Albuquerque — UTILITIES — U. S. Eng., P. O. Box 1538, Albuquerque, utilities, incl. water, sewers, lighting, 24 ft. 6 in. base, 2 in. asph. road, Serial No. Eng. 29-060-350-13, to F. D. Shuffebarger, Albuquerque, **$64,329.** Bids 9/13. CD 8/24.

O., Cleveland—COMFORT STATIONS—City, L. J. Weil, purch. agt., City Hall, Lakeside and 6 Sts., five 1 story, 16x22 ft. brick, block comfort station units, parts of city comfort station, to Schimer Schneider Co., 2719 Detroit Ave., and 4 comfort stations, to R. Hansen Co., 2646 N. Moreland Blvd., **$61,198.** A. Gattozzi, city archt.

Pa., Dormont—GRANDSTANDS, etc.—School Dist. of Dormont, High School, Dormont, 2 steel 7,000 seat grandstands, stadium, to O. H. Martin Co., 18 1st St., Sharpsburg, **$157,667.** Es., $175,000. Bids 8/29. CD 8/24.

Pa., Homer City — SWIMMING POOL — Homer City Community Memorial Assoc., Boro Hall, Homer City, 35x110 ft. main pool, childrens pool, dressing rooms and showers, to Indiana Constr. Co., Blairsville, **$60,000.** Ackley, Bradley & Day, Sewickley, engrs.

Tenn., Nashville—GYMNASIUM—Fiske University, 17 Ave. N., gymnasium, to W. F. Holt & Sons, 1531 Damonbreun St., Approx. **$300,000.** CD 7/25.

Tex., Chesterville — OIL PIPELINES — Del Ray Petroleum Co., N. Esperson Bldg., Houston, crude oil pipelines in vicinity proposed refinery, to O. L. Olsen, 534 Esperson Bldg., Houston, **$85,500.** Est. $90,000. CD 8/19.

Tex., Port Arthur—STADIUM—Port Arthur Independent School Dist., Port Arthur, stadium expansion, lighting system, Purchase and Hire. Approx. **$70,000.** Bids 7/7.

Tex., Waskom — GAS LINE GATHERING SYSTEM, etc.—Rogers Lacy Co., Longview, gas lines gathering system, **$65,000**; gas trunk line Waskon to Jefferson and to Carthage, **$106,000.** Owner builds.

Wyoming—OIL GATHERING SYSTEM, etc. —Stanolind Pipe Line Co., Cheyenne, oil gathering sys. in Johnson Co. and pipeline sys. in Natrona Co. Owner builds. Approx. **$250,000.**

Proposal Advertisements see pp. 85 to 87 & 101

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2797) will be received by Bureau of Reclamation, Denver, Colorado, October 13, 1949, and then publicly opened for furnishing labor and materials and performing all work for the erection of Universal testing machine, Office of the Chief Engineer, Bureau of Reclamation. The work is situated in Building 1-B, Denver Federal Center, Denver, Colorado. Time allowed for completion will be 120 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (373)

OFFICIAL PROPOSALS

Bids: October 10, 1949 (376)

Railroad Spur Tracks

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
FOR
TRANSIT SHEDS IN BLOCKS 10-A AND 10-B

CONTRACT PN-7

Sealed proposals for the construction of railroad spur tracks for the Transit Sheds in Blocks 10-A and 10-B at Port Newark, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 12:15 P.M. Monday, October 10, 1949, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, September 29, 1949.

Bids: October 13, 1949 (375)

Shoulder Paving

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 44, SECTION 13

For Shoulder Paving on Route 44, Section 13, from William Penn Avenue, Pennsville, to Fenton Corner, Lower Penns Neck Township, Salem County, length 2.353 miles.

Estimated:

1,600 cu. yds. Roadway Excavation—Earth
1,900 sq. yds. 8" Gravel Base Course
1,900 sq. yds. 3" Mod. Pen. Mac. Inter. Course
2,026 tons Pavement, Type FA-BC or Type SM

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, October 13, 1949, at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

OFFICIAL PROPOSALS

Bids: October 13, 1949 (374)

Pavement Sub-Sealing & Repairs

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 29, SECTIONS 7D & 8B

For Pavement Sub-sealing and repairs, on Route 29, Sections 7D and 8B, from Chimney Rock to Mountain Avenue, Bridgewater Township, and Bound Brook Borough, Somerset County, Federal Project No. FI-178(8). Length 1.520 miles.

Estimated:

3,400 sq. yds. Pavement Excavation
5,500 sq. yds. Reconstructed Shoulder
3,400 sq. yds. 10" Rein. Conc. Pavement Surface
6,000 units Holes drilled through Pavement
190,000 gals. Asphalt Cement for Sub-sealing

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Thursday, October 13, 1949, at eleven o'clock (11:00 A. M.—EASTERN STANDARD TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Project" authorized by the provisions of Title 27 of the Revised Statutes of New Jersey and supplements and by Sections 2, 3 and 4, P. L. 521, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 149 Main Street, Somerville, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be 65¢ per hour. The minimum wage paid to all intermediate grade of labor employed on the contract shall be 75¢ per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.25 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: Spencer Miller, Jr.
State Highway Commissioner

(Continued on page 86)

OFFICIAL PROPOSALS
(Continued from page 85)

Bids: October 17, 1949 (367)

Refuse Incinerator Plant

NOTICE TO BIDDERS
VILLAGE OF PORT CHESTER,
WESTCHESTER COUNTY,
NEW YORK

Sealed bids in opaque envelopes for Contracts No. 1A and 1B, covering the construction of a new Refuse Incinerator plant; and Contracts No. 2, 3 and 4, covering the Heating, Plumbing and Electrical Systems, respectively, will be received by the Village Clerk at a meeting of the Board of Trustees, to be held in the Court Room in the Police Headquarters Building, 350 North Main Street, Port Chester, Westchester County, New York, until eight (8) o'clock P.M., Eastern Standard Time, October 17, 1949, and then at said place, publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Form of Performance Bond may be examined at the office of the Village Clerk, 110 Willett Avenue, Port Chester, New York, and copies thereof may be obtained upon payment of Fifteen ($15.00) Dollars for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such set within ten (10) days after the date for the receipt of bids, will be refunded Five ($5.00) Dollars. Checks given as deposits on plans and specifications shall be made payable to the Village of Port Chester.

In general, the work included consists of the construction of a new refuse incinerator plant of 120 tons per day capacity, complete with earth ramp, grading and the demolition of the existing plant; all of which shall be performed with a minimum of interference with the operation of the existing incinerator plant during construction.

Contract No. 1A covers the construction of the Building and appurtenances. Contract No. 1B covers the furnaces and appurtenant mechanical equipment.

The heating, plumbing and electrical installations are to be executed under Contracts 2, 3 and 4, respectively.

Each bidder must deposit with his bid, but not enclosed in the envelope containing his bid, an amount of not less than Five (5%) percent of the base bid in the form of cash or a certified check (bid bonds will not be acceptable), subject to the conditions provided in the Information For Bidders.

The Village of Port Chester, Westchester County, New York, reserves the right to reject any and all bids, waive any informalities, or to accept that bid, acceptance of which will, in the judgment of the Board of Trustees of the Village, best secure the public interest and efficient work.

No bidder may withdraw his bid within Forty-five (45) days after the date of opening thereof.

DANIEL A. O'CONNELL,
Clerk of the Village of Port Chester,
New York

Bids: October 10, 1949 (378)

Fill Layer on Marginal Dike

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT

CONTRACT LGA-26

Sealed proposals for furnishing and placing a layer of fill on the marginal dike at LaGuardia Airport, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 11:30 A.M. Monday, October 10, 1949.

Contract documents may be seen at the office of the Chief Engineer, and copies will be furnished upon deposit of $25.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, September 29, 1949.

Bids: October 10, 1949 (377)

Halleck Street Paving, Driveway and Fence Construction

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL

CONTRACT GT-16

Sealed proposals for Halleck Street paving, driveway and fence construction at the Port Authority Grain Terminal will be received in the office of the Chief Eingineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 12:00 noon Monday, October 10, 1949, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer of the Authority, and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted of the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, September 29, 1949.

OFFICIAL PROPOSALS

Bids: October 5, 1949 (362)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Chapter 63, Laws of 1936, as amended, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on Wednesday, October 5, 1949 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for the return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 1				
		G. L. NICKERSON, Dist. Engr., 353 Broadway, Albany, N. Y.				
Albany, Greene, Saratoga, Rensselaer and Wash.	RC 49-91	Br. No. 3, S. H. 886; Br. No. 1, S. H. 8482; Br. No. 1, S. H. 8488; Br. No. 1, S. H. 5040; Br. No. 2, S. H. 490; Br. No. 1, S. H. 9311; Br. No. 1, S. H. 1938; Br. No. 4, S. H. 1685; Br. No. 1, S. H. 1835; Br. No. 1, S. H. 9016; Dunn Bridge, S. H. 9111; Troy-Menands Br., S. H. 9112; 112th St. Br.; Congress Street Br.	....	Painting Bridges	$6,000 Plans $5	$116,000
		DISTRICT No. 4				
		A. R. MULLIGAN, Dist. Engr., Barge Canal Term., Rochester, N. Y.				
Monroe	LOSP 49-2	Lake Ontario State Parkway, Sec. B	5.50	Rob.Grav. F. C. = 5.46 mi. Misc. Work = 0.04 mi. Conc. Closed Box 2 at 26' 3" 21' Open Conc. Box	$65,000 Plans $20	$1,158,000
Wyoming	RC49-114	Pike-Gainesville, S. H. 8121	0.05	8" Cem. Conc. Pavt. 20' & 28' Wide 60' Alpha I-Beam Alpha—$151.20	$4,500 Plans $5	$77,000
		DISTRICT No. 5				
		C. R. WATERS, Dist. Engr., 65 Court St., Buffalo, N. Y.				
Cattaraugus	FARC 49-112	Cattaraugus — Dayton, Pt. 1, S. H. 1568 Proj. F646 (5)	0.48	Asp. Conc. Opt. = 0.46 mi. Misc. Work = 0.02 mi.	$7,000 Plans $5	$119,000
Erie	PSC 5472	Elim. of Grade Crossing of the N. Y. C. R. R. with Erie St., West Seneca St., Church St. and the Terrace in the City of Buffalo	2.54	Asp. Conc. Opt. = 0.08 mi. 8" Cem. Conc. Pavt. Var. Wdt. = 0.86 mi. R. R. Track Changes = 1.60 mi.	$250,000 Plans $20	$4,520,000
Erie	PSC 5472	Elim. of Grade Crossing of the N. Y. C. R. R. with Erie St., West Seneca St., Church St. and the Terrace in the City of Buffalo	....	Buildings and Misc Work	$7,000 Plans $10	$125,000
		DISTRICT No. 8				
		J. S. BIXBY, Dist. Engr., Pleasant Valley Rd., Poughkeepsie, N. Y.				
Orange	FARC 49-113	Woodbury-Central Valley. S. H. 157 Proj. F532 (11)	0.86	9" Cem. Conc. Pavt. 24' Wide	$12,000 Plans $5	$203,000
Ulster	PSC 4781	Elim. of Grade Crossing of the N. Y. C. R. R. with Broadway in the City of Kingston	0.19	8" Cem. Conc. Pavt. 54' Wide 94½' Plate Girder 88½' Plate Girder	$54,000 Plans $10	$991,000
		DISTRICT No. 10				
		J. J. DARCY, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Kings	BQE 49-2	Brooklyn-Queens Expressway (Cont. 14)	0.31	Demolition of Buildings	$9,000 Plans $5	$160,000
Nassau and Suffolk	N. S. P. 49-2 S. S. P. 49-4	Northern and Southern State Parkways	....	Waterproofing Pavement	$800 Plans $5	$15,000
		Totals	9.93 miles			$7,368,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY,
Supt. of Public Works

(Continued on page 87)

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS
(Continued from page 86)

Bids: October 11, 1949 (371)

Sanitary Sewers, Manholes & Misc. Appurtenances

Sealed proposals for furnishing all labor and materials for the construction of approximately 28,770 lineal feet of 8" and 10" sanitary sewers, manholes and miscellaneous appurtenances to be constructed in the Township of Abington, Montgomery County, Pennsylvania, will be received by the Secretary of the Commissioners of the Township of Abington, at the Township office, York Road and Horace Avenue, Abington, Pennsylvania up to 7:30 o'clock p. m., Eastern Standard Time, and will be publicly opened at 8:00 o'clock p. m., Eastern Standard Time, Tuesday, October 11, 1949.

The work will be divided into three contracts designated as:

Contract No. 17—Branch and Intercepting Sewers in the Ardsley Area, Abington Township, Ward No. 9 consisting of approximately 13,100 lineal feet of 8" and 10" sanitary sewers.

Contract No. 17—Branch and Intercepting sewers in the North Hills Area, Abington Township Ward No. 6 consisting of approximately 14,900 lineal feet of 8" and 10" sanitary sewers.

Contract No. 18—Branch Sewers in the Noble Area, Abington Township, Ward No. 7 consisting of approximately 770 lineal feet of 8" sanitary sewers.

Information for Bidders, Form of Bid, Specifications and Form of Contract may be examined at the Township Office or at the Office of Albright & Friel Inc. Consulting Engineers, 121 South Broad Street, Philadelphia 7, Pennsylvania and copies thereof may be obtained at either office, upon a deposit of $10.00 for each set of documents for each contract. If the documents are returned in good condition within five days after the opening of bids, the full amount of the deposit for one set of each contract will be returned to each actual bidder and other deposits will be refunded with a deduction of $5.00 for each set of each contract returned to defray the actual cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond drawn to the order of the Township of Abington, equal to five per cent of the amount of bid must be submitted with the proposals.

Contractors may submit bids on any or all contracts.

The proposal must be sealed and marked "SEALED PROPOSALS FOR CONSTRUCTION OF SANITARY SEWERS—CONTRACT NO. 16 and/or 17 and/or 18 addressed to the Commissioners of the Township of Abington, c/o E. Raymond Ambler, Secretary.

The Board reserves the right to reject any and/or all bids.

No bid may be withdrawn within thirty (30) days after the actual date of the opening thereof.

E. Raymond Ambler,
Secretary

September 22, 1949

Bids: October 19, 1949 (370)

Improvement of Roads, Walks & Planting

INVITATION NO. 50-9

Subject: NOTICE OF ADVERTISEMENT FOR BIDS FOR IMPROVEMENT OF ROADS, WALKS AND PLANTING TDU, T AND U AREAS, OAK RIDGE, TENNESSEE.

TO: Prospective Bidders and Others Concerned:

1. On September 19, 1949, Roane-Anderson Company, as Agent for and on behalf of the United States of America under Contract No. W-7401-eng-115, will issue invitations for bids for Improvement of Roads, Walks and Planting TDU, T and U Areas, Oak Ridge, Tennessee.
2. The work consists of furnishing all labor, tools, equipment, materials (except those furnished by the Agent) and performing all work for the improvement of approximately two and seven hundredths (2.07) miles of city roads and lanes, including earthwork, drainage structures, concrete combined curb and gutter, hot asphaltic concrete base for pavement widening and leveling or wedge course, stabilized aggregate base course for widening existing and constructing new paved areas, hot asphaltic concrete surfacing, hot asphaltic concrete sidewalk along one side of roads and lanes; construction of cement concrete entrance walks and steps to approximately five hundred and four (504) dwelling units; top soil and seeding of newly graded areas and/or areas disturbed during construction, planting of trees; and appurtenant and related work together with such incidental work at the sites as may be required.

   Approximate quantities for major items are listed:

   55,000 Square yards top soil and seeding.
   22,450 Linear feet combined curb and gutter.
   152,738 Square feet of concrete entrance sidewalks (4" thickness).
   168 Cubic yards concrete steps.
   123,850 Gallons of Petroleum asphalt for hot asphaltic concrete including tack material.
   8,005 Tons of asphaltic concrete for roadway surfacing and asphaltic sidewalks.
   82 New catch basins.
   3,092 Linear feet of reinforced concrete pipe culverts.
   4,080 Cubic yards of borrow excavation.
   1,512 Trees.
3. All bids will be considered not only on the basis of the lowest bid but on the applicable experience, financial assets, integrity of the bidder and his ability to obtain equipment and employees. The Roane-Anderson Company, as Agent aforesaid, reserves the right to reject any and all bids and to waive any informality in bids received, and to accept or reject any item of any bid, unless such bid is qualified by specific limitation. However, all accepted items will be awarded as a whole to one bidder.
4. Bids will be received until 2:00 P.M. (EST) October 19, 1949 and then publicly opened. Two hundred forty (240) calendar days will be allowed for the completion of the work.
5. Requests for plans and specifications should be made to Roane-Anderson Company, Attention: F. C. Feld, Assistant Chief Purchasing Agent, Purchasing Dept., P. O. Box 456, Oak Ridge, Tennessee, and should be accompanied by a Postal Money Order or a certified check payable to the order of Roane-Anderson Company, in the sum of $15.00 which deposit will be refunded after the plans and specifications have been returned in good condition.
6. For additional information address the above mentioned, or telephone F. C. Feld, through Knoxville 4-3387, extension 24 or 25, or Oak Ridge 5-4361, extension 24 or 25.

ROANE-ANDERSON COMPANY, AS AGENT FOR AND ON BEHALF OF THE UNITED STATES OF AMERICA.

OFFICIAL PROPOSALS

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2796) will be received by Bureau of Reclamation, Amarillo, Texas, October 18, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of earthwork, concrete lining, and structures, sta. 3+00 to sta. 137+65, main canal, including pumping plant, sta. 136+65, Fort Sumner Project, New Mexico. The work is situated near Fort Sumner, New Mexico. Principal items are approximately: 183,000 cu. yds. of excavation; 3,000 cu. yds. of concrete in unreinforced canal lining and structures; installing 27,000 lb. of pump, turbine, and metalwork in pumping plant; furnishing and jacking 104 lin. ft. of 60-inch concrete pipe; and other work. Time allowed for completion will be 390 days. For particulars, address Bureau of Reclamation, Amarillo, Texas; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(372)

(Continued on page 101)

EMPLOYMENT

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICE

CONSTRUCTION ENGINEER. The Housing Authority of the Birmingham District has need of a capable and experienced planning and construction engineer for the development of its extended program of low-rent public housing and slum clearance made possible by the Housing Act of 1949. Must have thorough knowledge of the entire field of civil and construction engineering including related mechanical and electrical phases. Program to cover two years or longer. Applicants will state salary demanded, when available and pertinent information as to education and experience. Address: Housing Authority of the Birmingham District, 600 North 24th Street, Birmingham, 4, Alabama.

CIVIL ENGINEER — Registered, with sewer design experience. Salary to $5000 depending upon qualifications. Apply Personnel Supervisor, City of Dayton, Ohio.

CIVIL ENGINEER—For supervision of aerial topography and mapping. Experienced in field. Registered. Salary to $6000 depending upon qualifications. Apply Personnel Supervisor, City of Dayton, Ohio.

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewers, sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience. Salary requirements and date available. P-1155, Engineering News-Record.

(Continued on page 88)

WANTED IMMEDIATELY

Camp Manager	Civil Engineers
Construction Engineers	Surveyors
Construction Foreman Earthwork	Purchasing Agent
Construction Foreman Concrete	Construction Cost
Foreman Reinforcing Steel	Accountant

"For major construction project, South America, working knowledge of Spanish necessary. Reply: P-9979, Engineering News-Record, 68 Post St., San Francisco, Calif., mailing full details of experience, education and references".

ENGINEERS WANTED

1. **CIVIL ENGINEERS**
   For Modern Highway and Airport Design
2. **STRUCTURAL ENGINEERS**
   For all types of Major Highway Structures Design
3. **ELECTRICAL ENGINEERS**
   For Modern Airport Lighting and Control Design
4. **FIELD ENGINEERS**
   For Resident Inspection and General Supervision for major Engineering Projects

Designers — **Computers**
Draftsmen — **Inspectors**
Tracers — **Party Chiefs**
Estimators — **Instrumentmen**
Chainmen

WRITE OR WIRE AT ONCE TO

MICHAEL BAKER, JR., INC.
CONSULTING ENGINEERING
ROCHESTER, PENNSYLVANIA

SENIOR CIVIL ENGINEER

Specialized in Earth Dam design and construction, familiar with soil mechanics including sand drain practice.

For Work on Guam

Send complete record of background to:

PACIFIC ISLANDS ENGINEERS
Frederic R. Harris, Inc.
Blanchard & Maher
Keller & Gannon

Ferry Bldg., San Francisco, Cal.

A COURSE OF INSTRUCTION BY MAIL IN

STRUCTURAL ENGINEERING

Thirty-ninth Year

OUR COURSES HAVE HELPED THOUSANDS
to better positions and to pass State Board Examinations

- Complete Structural Engineering Course.
- Public Works Structures.
- Architectural Engineering.
- Special Course C (State Board Exams).
- Reinforced Concrete Engineering.
- Structural Steel Designing.

Monthly payments permissible. Information sent without obligation. WRITE TODAY

WILSON ENGINEERING CORPORATION

College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (38 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS VACANT
(Continued from page 87)

ESTIMATOR—REINFORCING Bar Fabricator operating in the southeast requires services of man capable of making accurate Bar Estimates and also capable of managing Estimating Department. Have openings for Reinforcing Bar Detailers. Write, giving age, availability, experience, capabilities and salary expected. P-9838, Engineering News-Record.

WANTED: CONCRETE Paving Research Engineer, age 30 to 45, at least 8 years experience in concrete highway paving construction, design, and testing. Excellent opportunity for engineer interested in research and development. Salary open, depending upon qualifications. Location: near Chicago. P-9911, Engineering News-Record.

CONTRACTOR'S ESTIMATOR wanted by established construction company. Excellent opportunity available for man with good estimating background on concrete bridges, dams and foundation work. Must know and follow costs and be able to handle complete bidding. State qualifications, experience, background, etc. P-9960, Engineering News-Record.

ASSISTANT OR Associate Professor to teach Fluid Mechanics advanced courses in Hydraulic Engineering and assist with research program in Hydraulic Engineering. Advanced degree is preferred. P-1018, Engineering News-Record.

WANTED: EXPERIENCED Structural Detailer good opportunity. Address Arkansas Foundry Company, Box 909, Little Rock, Arkansas.

STRUCTURAL DRAFTSMEN. Require several first class experienced detailers and checkers for structural fabricating plant (in Detroit). Give complete information, experience and rate desired. P-1021, Engineering News-Record.

WANTED—CHIEFS of Party, Tranit Men, Rod Men, Chain Men, for coordinated topographical survey for highway design. Send Resumes. Boswell Engineering Co., Ridgefield Park, N. J.

WANTED: EXPERIENCED Precast Concrete Keymen and Mechanics familiar with casting, shipping, and finishing joists, slabs and specialties. Expanding business. Steady work. Good pay. Give full particulars about yourself. Write—M. A. Arnold, P. O. Box 477, Greensboro, N. C.

WANTED: EXPERIENCED Structural Steel Detailer and Checker—steady job—salary open. Send full experience record to P. O. Box 955, New Haven, Conn.

EMPLOYMENT SERVICE

SALARIED PERSONNEL $3,000-$25,000. This confidential service, established 1927, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

STRUCTURAL ENGINEER, graduate, licensed, 25 years experience design and construction of subways, buildings, foundations, waterfront structures, etc., and analysis of indeterminate structures. PW-9959, Engineering News-Record.

CONSTRUCTION PROJECT MANAGERS SUPERINTENDENTS

During the next few months an internationally known engineering and building firm will require several top notch project managers and superintendents with proven ability to manage various sized industrial construction projects consisting of building construction and mechanical installations.

These positions offer lengthy employment, excellent working conditions and good salary for qualified applicants.

Please submit complete resumes setting forth experience, education, size jobs under your supervision, references and date of availability.

P-9980, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

STRUCTURAL DESIGNERS DETAILERS

on bridge and highway projects
Consulting Engineers Office
Location—Middle West
Give full experience, reference and salary expected.

P-9954, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS WANTED

STRUCTURAL ENGINEER, 25 years thorough responsible experience in design, checking, rigid frame analysis. Highest qualifications. PW-9755, Engineering News-Record.

CONTRACTOR'S RIGHT Hand Man—Experienced Manager, Engineer-Estimator, Purchasing Agent on: Commercial, Multi-Residential, Industrial Bldg. Construction, Including all Utilities; and on Engineered Construction covering Airports, Marine Facilities; Railroads, Rods, Quarry Operations. Desires permanent position as Manager, Estimator, Purchasing Agent for Gen. Contractor. Good background for position of Area Sales Manager for Cement Co., Bldg. Supply Co., Equipment Dealer. In reply state exact salary connected with position open. References. PW-9913, Engineering News-Record.

PROJECT MANAGER: General or Job Superintendent: 30 years experience; heavy and light construction; housing; apartments; schools; hospitals; office buildings; chemical; industrial plants; powerhouses; handle all trades, including mechanical and allied work. PW-8779, Engineering News-Record.

CIVIL ENGINEER—20 years experience in layout and supervision of construction of industrial plants, commercial buildings, highways and bridges. Free to travel. Available immediately. PW-1008, Engineering News-Record.

EQUIPMENT MANAGER—Ass't General Supt. Age 39, aggressive, cost conscious, with practical knowhow. Desires position as Eq. Manager, ass't. to General Supt., or Owner of medium sized company. Thorough knowledge of all phases equipment management and job operation. 15 years experience in maintenance and operation of equipment. 5 years own construction business. Equally at home in field or office. PW-9993, Engineering News-Record.

LEARN TO ESTIMATE

Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM

1115 So. Pearl St., E-333
Denver, Colo.

POSITIONS WANTED

CONSTRUCTION SUPERINTENDENT with excellent background in heavy construction; with following. Geo. W. Urban, Alexander Road, Bedford, Ohio. Phone 1021-J-5.

GENERAL CONSTRUCTION Superintendent or Project Manager, Graduate Civil and Mechanical Engineer, 15 years experience as General Supt. on varied projects including refineries, power and industrial plants, utilities, housing, earthwork and docks. Past six years on foreign work, speaks and reads several languages. A-1 references. Native American, good health. Foreign assignment preferred. Available immediately. PW-9945, Engineering News-Record.

STRUCTURAL DESIGNER. Ten years experience, steel and concrete comm'l, ind'l, bldgs., power plants, and copper mine structures. Prefer Met. New York. Will relocate for opportunity. Available now. PW-9924, Engineering News-Record.

ENGINEERING EXECUTIVE, Administrator, Manager-registered professional engineer; M.S. in Civil Engineering; 41; married; 17 years experience including 10 with present employer in permanent executive position heading large design, construction, maintenance and operation organization. Desires new permanent connection South, Midwest, West. PW-9990, Engineering News-Record.

(Continued on page 89)

CIVIL ENGINEER

25 years experience, domestic and foreign, in plans, design and construction. Specialized in materials, soil mechanics, foundations; office and field. Administrative qualifications. Willing to locate anywhere.

A-1 References

PW-9988, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

POSITIONS WANTED
(Continued from page 88)

CHIEF ESTIMATOR or Contractors Manager. 20 years with large and moderate size General Contracting firms on buildings, waterworks and heavy construction. Experience covers bidding and negotiating contracts also buying, organizing and managing construction projects. Available on short notice. Interested in straight salary, salary and bonus or partnership. PW-9984, Engineering News-Record.

CHIEF DRAFTSMAN Structural desires connection small progressive shop. "Sweat" shop and fabricating shop experience. Good organizer. PW-9983, Engineering News-Record.

CIVIL ENGINEER Graduate 5 years field experience earthwork, pile driving, cofferdams, concrete work, surveying. Desires foreign employment preferably Latin America. Recently completed job in Venezuela. Can furnish excellent reference. Have working knowledge Spanish. Available at once. PW-1015, Engineering News-Record.

ARCH. APPRAISER, 31, married, veteran, experienced in all phases of appraisal procedure, capable of organizing and managing appraisal dept. large indust. firm. Employed but available immed. Mid West prefer. PW-1616, Engineering News-Record.

CONSTRUCTION ENGINEER—Fifteen years experience, heavy construction, refinery and power plant work, United States and South America. Speak construction Spanish. Interested in foreign work only. Any country. Available now. PW-1017, Engineering News-Record.

SELLING OPPORTUNITY WANTED

SALES ENGINEER. Member ASME & AISE moving to Florida. Would like to represent machinery manufacturer or will work for established distribution. SA-9779, Engineering News-Record.

PATENT ATTORNEY

Patent Practice
before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 454, 815-15th Street, N.W., Washington 5, D.C.

Napoleon once said
"An Army Marches on Its Stomach"
We Have Fed Millions
KANE INDUSTRIAL SERVICE
Industrial Feeding.
Labor Camps.
Labor Camp Equipment.
Free Employment Agencies.
30 Years' Experience in the Housing and Feeding of Men for Satisfied Clients.
Abundant Labor Supply available for Large Projects Anywhere.
VALENTINE B. KANE & ASSOCIATES
1410 State St. New Haven 11, Conn.

A National Organization for
FEEDING and HOUSING
employees of Contractors . . . Railroads . . . Industries . . .
OLYMPIC COMMISSARY CO.
CHICAGO 6, ILL.: 302 S. Canal St.
Phone HA 7-1570
SEATTLE: 316 Second Ave., South
MINNEAPOLIS: 105 Nicollett Ph: Atl 4845.

BULLDOZER
HD-10W with Hydraulic Angle Blade—G.M. Diesel New 1948. Guaranteed Excellent Condition.
SACRIFICE FOR QUICK SALE
TRENTON HOMES, INC.
1510 Pennington Road Trenton, N. J.
Phone 4-0060

LIFTING BLOCKS
UNUSED

50—4 sheave 18" blocks, forked shackle, steel galvanized sheaves, wt. 740 lbs. original cost $460.00 each.
$48.00 each

50—Triple sheave 18" blocks, steel galvanized sheaves, 1" cable, 2" pin, alemite lubricate, swivel shackle. (50 ton capacity reeved with the 4-sheave block)
$36.00 each

50—Single sheave 18" blocks, steel galvanized sheave, 1" cable. . **$15.00 each**

R. A. PARKINSON & SON
519 North Delaware Ave.
Philadelphia 23, Penna.

LOCOMOTIVES FOR SALE OR LEASE

2—100 ton, diesel electric, tractive effort 59,700#, four traction motors, new 1940-42, excellent condition for ICC.
1—44 ton, GE 380 HP railway type diesel electric switcher, new 1945, Caterpillar D-17000 diesel units, four traction motors.
2—65 ton Porter saddle tank steam locomotives, new 1942, immediate delivery.

LOCOMOTIVE CRANES

1—Ohio Model F 30 ton diesel powered new 1946, double drums, Caterpillar diesel unit.
2—Ohio Model G 35 ton gas powered new 1943 but unused, Buda power units, double drums.

CARS

75—all steel 70 ton capacity hopper cars
25—all steel 50 ton drop bottom gondolas
19—all steel 20 cu. yd. air dump cars

Our stock includes many other locomotives, cars, cranes and heavy equipment items. We invite your inquiries.
Write — Phone — Wire
PAN-AMERICAN ENGINEERING CO.
P. O. Box 2576 Telephone L.D. 339
Dallas, Texas

41 B Bucyrus Steam Crane
#5 Northwest Crane
Worthington 110 2 stage air Compressor
EDWARD ACKER CO.
SETAUKET, N. Y.

TANK CARS

22—10,000 Gallon, Class 3, Tank Cars, interchangeable type, all first class operating condition. Detailed specifications available upon request. Priced attractively for prompt delivery.

FS-1022, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Save Over 50% on Your
TARPAULIN REQUIREMENTS!!
2000 U. S. ARMY SURPLUS
HEAVY DUTY (No. 4 DUCK)
TARPAULINS
Waterproof-Flameproof-Machine Repaired
GUARANTEED RECONDITIONED
20' x 20' @ $30.00 ea.
Other Sizes Priced Proportionately Low
SEGALL MACHINERY CO.
700 W. West St Batto 30 Md.
Saratoga 6526 3673

COMPLETE ROCK CRUSHING PLANT AND QUARRY
FOR SALE

In operation at present with approximately 100,000 tons on order; located in southern Illinois on the Illinois Central Railroad with favorable competitive position for furnishing crushed stone and lime in southern Illinois, western Kentucky and western Tennessee; has facilities for loading directly into railroad cars from the bins. This modern plant and equipment will crush 150 tons per hour. All the stone in the quarry is clean from dirt seams and passes the test for all uses. There has been about three million tons removed from this quarry. At present we are working a 100 foot face. Situated between Cairo and Anna, Illinois near Ullin, Illinois. This plant recently became the property of the present owner because of the dissolution of a large corporation in Kentucky and as the owner is inexperienced in the rock crushing business he wishes to dispose of this plant at a sacrifice. *Contact* Tom Ballard or John Hamilton, phone 3926 at Bardstown, Kentucky, if interested.

FOR SALE
1—N. W. Shovel
1½ c.y., Diesel New, never been used.
A. V. WILLIAMS
Box 145, Baltimore 20, Md.
Phone: Essex 1312

LAND CLEARING PLANT

1—1947 International TD18 Tractor with Bucyrus Erie D.D.P.C.U. with Bulldozer and Rake, 1800 hours
1—1947 International TD18 Tractor with Bucyrus Erie D.D.P.C.U. with Angledozer and Rake, 1800 hours
1—#10 Caterpillar Road Patrol with cab, lights, scarifier, tandem drive
1—15-ton Rogers Semi-Trailer
1—White 20A Tractor with fifth wheel 1941
2—Heavy Gang Disc Plows
1—Roman Major 4-ton Stump and Brush Harrow
1—LeTourneau 5-H Rooter
1—6x6 Sterling with Gar Wood Crane 1943
1—Dodge Panel Service Truck 1941
1—Ford Pickup Truck 1947
1—Farmall 20
1—2-ton Tip Trailer

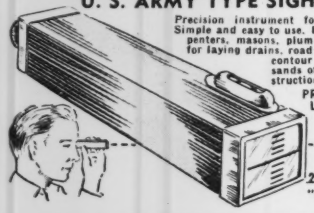
All in excellent condition and working. Numerous accessory tools and parts. Located 50 miles from New York City.

FS-1032, Engineering News-Record
330 West 42nd St., New York 18, N. Y.

SURVEYING INSTRUMENTS

USED • REBUILT • SALE • RENT • REPAIRING

QUICK ACCURATE SIGHTS with U. S. ARMY TYPE SIGHTING LEVEL



Precision instrument for preliminary survey. Simple and easy to use. Ideal for builders, carpenters, masons, plumbers, contractors, etc., for laying drains, road building, foundations, contour farming, has thousands of uses. Comes with instructions.

PRICED LOW $1.85 EA.

Ship. Chg. 15¢ Ext. Ea.

SEND CASH, CHECK OR MONEY ORDER—SORRY NO C.O.D.

U. S. ARMY LENSATIC COMPASS

Accurate and dependable. Dial marked 0 to 360 degrees. Avoid the dangers of misdirection. Comp. with case. Used—Not Abused.

OUR $7.50 VALUE $1.85

Ship. Chg. 15¢ Ext.

J. JACOB SHANNON & CO.

214 N. TWENTY-SECOND ST., PHILA., 3, PA.

"The Oldest Equipment House in Philadelphia"

TRANSITS and LEVELS

Immediate delivery on expertly rebuilt, well-known makes. All makes of instruments repaired. Work guaranteed

Write for used instrument list today

J. H. WEIL & CO.

1325 CHERRY ST. PHILADELPHIA, PA.

GURLEY REPRESENTATIVES

INSTRUMENT REPAIR BY CRAFTSMEN

Our craftsmen have a completely equipped department fully able to accommodate the repair of all makes of transits, levels and measuring tape. Work includes thorough overhaul, cleaning, oiling and adjustment.

Precision work guaranteed.

DAVID WHITE COMPANY

317 W. Court St., Milwaukee 12, Wis.

WANTED

CIRCULAR GRADUATING WORK

Our new graduating engine permits precision circular graduation with accuracy greater than heretofore commercially able. Let us bid on your requirements for any scientific instruments, on all metals and glass.

THIS IS ANOTHER REASON WHY YOUR REPAIR WORK SHOULD GO TO BRUNSON

TRANSITS — LEVELS

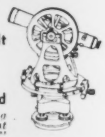
All Makes

• Repaired • Rebuilt

• Parts Supplied

All Work Guaranteed

Rented—Sold, new or used



Patented Brunson Ball Bearing Base installed on any instrument gives "longer lasting accuracy"

BRUNSON INSTRUMENT CO., INC.

1405 Walnut St. Kansas City 6, Mo.

LASTING BRUNSON ACCURACY

SPECIALIZED REBUILDING

of surveying and engineering instruments

All makes and models expertly repaired in modern shop. All work guaranteed

USED REBUILT INSTRUMENTS

for sale or rent

ROY D. HICKERSON

46 JOHNSON AVE INDIANAPOLIS 19 IND

FOR RENT

GURLEY

SURVEYING INSTRUMENTS

NEW • REBUILT

Replace your platinum wire or spider web reticle with the exclusive new Gurley *glass* reticle.

Patterns to suit every surveying need.

W. & L. E. GURLEY

Fulton St.-Station Plaza,

Troy, New York

FROM STOCK

Brand New & Rebuilt

TRANSITS & LEVELS

Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

Midwest Representative: W. & L. E. Gurley

NATIONAL BLUE PRINT CO.

Established 1914.

210 S. Canal St. Chicago (6), Ill.

For Rent

SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 50 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

FORSYTHE EQUIPMENT CO., INC.

11 West 42nd St. New York 18, N. Y.

Tel. PEnnsylvania 6-7554

TRANSITS AND LEVELS

New or Rebuilt Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also *buy* your old instruments or take them in *trade*. A complete line of Engineering Instruments and Equipment for field or office. Write for catalog N.R.-99.

WARREN-KNIGHT CO.

Manufacturers of Sterling Transits and Levels

136 No. 12th St., Philadelphia 7, Penna.

RE-BUILT REPAIR RENT REAL EXPERTS

ALL MAKES

BUFF

69 Day St., New York

Rent with Purchase Option

PAVING EQUIPMENT

Forms, Bins, Finishers, Pavers, etc., etc.

DRAVO-DOYLE COMPANY

2601 Preble Ave. Pittsburgh 12, Pa.

FOR RENT

New and almost new Manitowoc Speedcranes

60 ton—2½ cu. yd. capacity Combination cranes, dragline and clamshells, caterpillar mounted—diesel powered. Reply

FR-8967, Engineering News-Record

330 West 42nd Street, New York 18, N. Y.

It costs no more

to have your instruments of any make *repaired* by the makers of the WORLD'S FINEST SURVEYING INSTRUMENTS since 1871

C. L. BERGER & SONS, INC.

37 Williams Street, Boston 19, Mass.

IF there is anything you want that other readers can supply— OR . . . something you don't want— that other readers can use— Advertise it in the SEARCHLIGHT SECTION

L.B.SMITH INC.

OFFERS

AIR COMPRESSORS

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.
Gardner-Denver, 105 foot, with air receiver, hose reel, driven by power take-off and mounted 1941 Ford.
Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver 2-stage 160 ft., skid Mtd.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels, Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

QUARRY EQUIPMENT & BINS

New 16 x 16 double clamshell gates.
20" x 6'6" Belt Type Magnetic Separator.
Link-Belt style 146 vertical centrifugal discharge bucket elevator, belt type, fully enclosed, extendable to 65'.
3018 Cedarapids roller bearing roll crusher, new condition, new warranty, used as demonstrator only.
18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
10 x 36 Cedarapids, practically new.
10 x 20 Champion #4½ prim. jaw crusher.
10 x 7 Allis Chal. Blake type jaw crusher.
Williams 20-S pulverizer.
Cedarapids No. 1 Kubit.
100 ton 3 compartment storage or aggregate bin with or without batcher and scales.
60 ton 2 compartment storage bin with clam shell gates.

ELECTRIC MOTORS

New & Rebuilt—All Sizes
3 to 125 HP in stock
Open and Totally Enclosed

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
Sterling COE Model 255GCS tandem drive tractor, 9.00x24 tires, 200 HP Cummins supercharged diesel, complete with 40-ton Rogers low bed equipment trailer, 16—7.50 x20 tires, airbrakes, outriggers, excellent condition.
Van Trailers with 17' x 7'8" x 6' bodies. Five ton capacity.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New Murphy 4 and 6 cylinder diesels.
GM 6 and 12 cylinder diesels, practically new.

SHOVEL ATTACHMENT

Lorain 30A chain crowd, LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS #5877, new ¾-yd dipper LBS#7750.
P&H 203A, LBS#2527, 19'6" boom 13' stick ⅜-yd dipper.
Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.
Koehring 502 with necessary parts to convert from crane to shovel, 21' boom 16' stick 1¼-yd dipper.

BACKHOE ATTACHMENT

Lorain 41 backhoe, LBS#5429, with 18' boom, 7' stick, 36" cutting width Amsco bucket. Will fit any ¾-yd Lorain with serial number over 9.000.

DRAGLINE FAIRLEADS

New Osgood ½-yd Model 200.

BACKHOE BUCKETS

¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
26" outside width solid bottom type LBS #4377, good condition.

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Bucyrus-Erie 20B, ¾-yd LBS#3801.
Lorain 41, ¾-yd, LBS #7433, new condition.
New Lima 1-yd, Amsco, LBS#2295.
Bucyrus-Erie 1¼-yd gas air, LBS#3782, fair.
Lorain 75 manganese 1¼-yd, LBS#7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS#2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS#5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#5763.

DIESEL GENERATORS

7½ KW to 125 KW. Alternating and direct current.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

Ransome 34E dual drum, new October, 1943, with 36'9" boom, 1000 gallon auxiliary water tank, Cummins engine, rebuilt.
Jaeger Model 14DL, non-tilt mixer, rebuilt.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.
Koehring 10'-16' finisher, rebuilt.

Concrete Spreaders

Blaw-Knox type SA 10'-15' spreader, new 1943. New condition.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
1300'—Blaw-Knox 8"x8" forms, with stakes.
4450—Heltzel 9"x8" forms, with stakes.
1430'—Heltzel 10"x8" forms, with stakes.
1010'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

BELT CONVEYORS

New 18"—24"—30"—36"
- "Sealed-for-life" idlers
- Lattice or channel frame
- Shipment from stock depending on length

CLAM—DRAG—SCRAPER BUCKETS

GRADERS

New Warco D76 tandem driven grader, 12' blade, V-type scarifier, 13.00x24 tires all around, 24,500 lbs., International UD14A diesel engine.
Caterpillar 44 hydraulically operated drawn grader, 12' blade, wt. 8,300 lbs.
York Corporation Model SR drawn grader with scarifier, 8' blade, rakes, pneumatics, wt. 7,900 lbs.

DIESEL POWERED TRACTORS

"FD" Cletrac with Buckeye blade and double drum P.C.U.

Phone **HARRISBURG, PA. 7-3431**

LASTING • BONAFIDE • SERVICE — L.B. SMITH, INC.

L.B.SMITH INC. CAMP HILL, PA. SUBURB OF HARRISBURG

WE OWN THE EQUIPMENT WE ADVERTISE

BUCKETS: 6—Steubner 32 cu. ft., drop bottom, self-clearing, Concrete Buckets.

CLASSIFIER: 1 New 78" x 35' Spiral Classifier, Manganese fitted, with tank and 10 HP Motor etc. All complete, NEW condition.

EUCLID TRUCKS: 5—Model 27FD, end dump, with Cummins Diesel Motors and one spare rebuilt motor.

SHOVELS: 1—Bucyrus Erie 120-B, 5 yd. dipper, electric.
1—Bucyrus Erie 170-B, with 7 yd. dipper, electric.
1—Bucyrus Erie 54-B, 2½ yd., diesel
1—P & H model 855, combination Shovel & Dragline.
1—Lima 802, 2½ yd., diesel, combination Shovel & Dragline.

DRAGSCRAPER OUTFIT: Sauerman 1½ yd. Crescent bucket, 60 H.P., 440 volt, motor and controls, cables and blocks, etc.

DRAGLINE: Monighan, 200-W, diesel, 140' boom, 6 yd. bucket; condition like New.

OVERHEAD TRAVELING CRANES: 2—62' span, 10 tons capacity, three motors, 5, 10 and 12 H.P., 3 phase, 60 cycle, 440 volt. These cranes are NEW. With or without runway and uprights.

CARS: 3—Air dump, 30 yd. capacity, with drop doors. 10—20 yd. air dump; sale or rent.

KILNS, COOLERS, DRYERS: 1—Single Shell 34" x 20 ft., complete with drive, burner, no motor. 1—Cristi BV, 80" x 50'. 1—10' x 90' heavy duty type Dryer, complete with dust collector and all auxiliary equipment. 1—Traylor 54" x 40', single shell, Dryer. 1—Ruggles Coles class XF 12, 80" x 60' long, double shell Dryer. 1—9' x 165' Allis Chalmers Rotary Kiln. Traylor Single Shell 60" x 40' with or without motors.

HARDINGE MILLS: Conical Ball Mills, 8' x 20" and 8' x 30", manganese steel lined, Herringbone gears with motors and V-belt drive. 1—6' x 36" silex lined. 1—7' x 9' manganese lined, with or without 250 H.P. synchronous motor. 8' x 20" and 10' x 72" steel lined with or without motors. 1—3' x 8' Rod Mill.

GYRATORY CRUSHERS: 1—30" and 42", complete with motor and drive. 1—Allis Chalmers 10-K, 9-K, 7½-K, and 6-K. 1—Austin No. 8, 20" opening with feeder. 1—Telsmith 13-B, all steel.

JAW CRUSHERS: All sizes 4 x 6 to 48 x 60.

REPAIR PARTS: for Traylor 36 x 48 Jaw Crusher.

REDUCTION CRUSHERS: Telsmith 36" Cone; Telsmith 32B complete with V-belt pulley; Allis Chalmers type R322 fine reduction; Traylor type TY, 1'8" and 5'6". Symons 2 ft. Cone.

M.G. SET: G.E., 3 phase, 60 cycle, 220 volt, 20 H.P., D.C. generator, 12 KW, 125 volt, with push button compensator.

MOTOR: G.E. 40 H.P., 3 phase, 60 cycle 220/440 volt, 1765 RPM, with V-belt pulleys and belts, starter, etc.

GOODRICH SUPER LONG LIFE CORD CONVEYOR BELT (NEW): Large quantity of Goodrich Belt 42" wide, 6 ply, 42 oz. duck, 7/32" top cover, 1/16" bottom cover, on original reels, all NEW, NATURAL RUBBER, with or without mechanical parts.

MINE HOISTS: 1—All steel drum 8 ft. dia., 1½" rope, 64,000 lbs. single line pull, 600 FPM, 400 H.P., 2200 volt, A.C., with all control equipment. 1—600 H.P. single drum 8' x 12' with motor 2200 volt, A.C. and controls. 1—250 H.P. single drum, 7'x3" x 5', 30,000 lbs. single line pull, 750 FPM, complete. 1—200 H.P. single drum, 42" face, 60" dia., A.C., 2200 volt and controls. 1—150 H.P. double drum, 38" dia., 42" face, 440 volt, A.C., complete with controls.

A. J. O'NEILL
Lansdowne Theatre Building
LANSDOWNE, PA.
Phila. Phones: Madison 8300-8301

TRACTORS
Cat. D4 with hydraulic bulldozer.
Cat. D7 with straight blade and D.D.P.C.U.
Cat. D4 Traxcavator with 1 yd. bucket.
Int. TD18 angledozer blade, factory new.
4—Cat. D-8-2U Series, DDPCU, st. blade.
6—Cat. D-8-8R Series, DDPCU, st. blade
1—Factory new Cat D-8 just rec'd. DDPCU.

READY-MIX CONCRETE PLANTS
Butler 300 ton, 2 compt. aggregate; one compt. 400 bbl. cement complete with scales and elevator, etc.
Bulk cement bin 350 bbls. complete. New.
400 bbl. Bulk Cement bin weight batcher. New.
Two 100 ton 3 compt. aggregate bins. Complete.
600 bbl. Bulk Cement Silo.
Heltzel 100 ton 3 compartment aggregate bin.

SHOVELS—CRANES—DRAGLINES
Marion Model 392 Dragline 2½ yds. Diesel. 100' bm.
Manitowoc Model 3500 Diesel Shovel, 2 yds.
Page 621S Dragline, Diesel, 6 yds., 135' boom.
Buc-Erie 37B Diesel Crane, 100' boom, 35 tons.
Lorain Model 82 Diesel Shovel, 2 yds.
Lorain Model 820 Diesel Crane, 40 ton cap. 90' bm.
P&H Model 1055 Diesel Dragline, 80' boom.
Lima 1201 High Lift Diesel Shovel.
P&H Model 1055 High Lift Shovel, Buda Diesel
Northwest 80D 2½ yd. Diesel Shovel. 1946.
P&H 655B 2 yd. Diesel Shovel. New Feb. 1947.
Buc-Erie 200B, 6 to 10 yds. Elec. Shovel.
Buc-Monighan 6 to 8 yds. Diesel Dragline.
P&H 1055 Dragline, Buda Diesel engine, 4 yd.
Buc-Erie 120B 4 to 5 yds. Elec. Dragline.
Lorain MC4 Moto-Crane. New 1943. 75' Boom.
P&H Model 255A 18 ton Truck Crane.

GRADERS—TRANSIT MIXERS
ROAD FORMS—FINISHERS
B-G Model 879 Asphalt Finisher with extensions.
Koehring longitudinal Finishers 20-24 ft.
3 Caterpillar 12 Patrol Graders. 9K Series.
3 Galion "10H" Motor Patrols. Excellent.
Adams 412 Motor Grader with scarifier.
Austin Western Model 99M Auto Patrol Diesel.
2 Ransome 3 yd. Transit Mixers Hi-Discharge.
10 Jaeger 4 yd. Transit Mixers. Rebuilt cond.
REX 4½ yd. Transit Mixer on Diamond T truck.
Road Forms: Blaw Knox 8000 ft. 9x9.

TRENCHERS
Cleveland Baby Digger Model 95, New 1943.
Buckeye Mod. 120, Cap. 24" to 30". 12 ft. deep.
Barber-Greene Model 44C. Excellent condition.
Buckeye M-12 capacity 18" to 7 ft.

ASPHALT PLANTS
Masden 3000# capacity. Complete.
Cedar Rapids "Speedline". Complete.
Cedar Rapids Model B. Complete.
Barber-Greene Model 848 "Travel Plant".
Barber-Greene 842 Portable Utility Plant. Complete

STIFF LEG AND GUY DERRICKS
American stiff leg 40 to 50 tons 80' boom.
American Terry Steel stiff leg 100 ton 75' boom.
American 20 ton stiff leg 90' bm.
American 15 ton stiff leg 65' boom.
Wiley Mod F. stiff leg 60' bm. NEW.
Ketler 25 ton steel Guy 100' mast 90' boom.
Terry 22 ton Guy Derrick 115' mast 100' boom.

ROCK CRUSHING & SCREENING PLANTS
Cedar Rapids Junior Tandem plant. New 1947.
Cedar Rapids Portable "Pitmaster". Complete.
Pioneer Model 56 Portable Crushing Plant.
Cedar Rapids 2-A Portable Crushing & Screening

PUMPCRETES
REX 160-180-190-200 with fittings.

RICHARD P. WALSH CO.
30 Church St. New York 7, N. Y.
Cable RICHWALSH COrtlandt 7-0723-4

FOR SALE

One or more at $300 each:

New Army Surplus cable operated bulldozer blades for Caterpillar Model D-7s, complete with front A frame with built-in radiator guard, trunnion mounts and all necessary parts to put on a bare Tractor.

WILL TRADE OR LEASE
WHAT HAVE YOU TO OFFER?

2—Reconditioned late Model D-8 Caterpillar Tractors, 8R Series, equipped with DDPCU's and cable operated angledozer blades.

DANBURY MOTOR EXCHANGE
P. O. Box 1017, Danbury, Conn.
Phone: 2344 or 3240

SALE or RENT

1—¾ yd. Koehring 304 Crane

1—80D Northwest-Diesel S. & C.

2—10-ton American Terry all steel Stiff Leg Derricks

1—30-ton Ohio Diesel Loco. Crane, New 1946

1—30-ton Plymouth Std. Ga. Gasoline Loco. 1943

B. M. WEISS COMPANY
Girard Trust Co. Bldg., Philadelphia 2, Pa.
Rittenhouse 6-2311

FOR SALE

2—20 IN. DREDGING PUMPS

Complete with dredging pipe—swivel joints and fittings — driven by reciprocating steam engines

MARINE BOILER

FOSTER WHEELER CROSS DRUM

Designed pressure 200# per sq. in. Test pressure 300# per sq. in. Heating surface 3000 sq. ft. Furnace volume 470 cu. ft. Capacity 15000# steam per hour at 170# per sq. in.

OIL FIRED EQUIPMENT IN EXCELLENT CONDITION

WRITE OR WIRE TO:

AMERICAN SHIPBREAKERS, INC.

FOOT OF MADISON STREET
WILMINGTON, DELAWARE
Phone: **Wilmington 4-0039**

FOR SALE or RENT with OPTION TO BUY

1 Lorain Diesel Shovel 1½ yard capacity
2 Caterpillar D-7 Bulldozers
2 International TD-18 Bulldozers
2 International TD-14 Bulldozers
3 Truck Cranes, Lorain-Bay City-Insley
1 Lorain ½ yd. Shovel & Backhoe
Dragline & Clam Shell Buckets ½ to 1 yd. capacity
New spare parts for TD18-TD14-HD7. Under list price

All late models in A1 Condition, Reasonably Priced.

BENDIX MACHINERY CO., Inc.
401 Broadway, N. Y. 13, Tel: CA nal 6-5693

PUMPS AT SACRIFICE

Factory New Barnes Centrifugal Pump Sizes 1½" to 6" and Barnes Single Diaphragm Pumps Immediate delivery

HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

---

80 D NORTHWEST SHOVEL

2½ Yd.

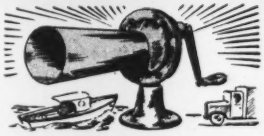
Serial #8878, New 1946

Price $17,000

F.O.B. Cars Benson Mines, N. Y.

P. O. Box 1737 Pittsburgh, Pa.

SHANNON'S SPECIALS
FOR ALL CONSTRUCTION JOBS



NEW U. S. ARMY HEAVY DUTY 10-INCH HAND OPERATED KLAXON HORN
LOUD GROWL DEMANDS IMMEDIATE ATTENTION

A device that gives loud warning when blasting or for any construction or mining job where a positive warning signal is needed. Independent of any power source. Can be heard great distance.

$10.00 VALUE **$3.75**

SHIP CHG. 50c EXT. EACH.

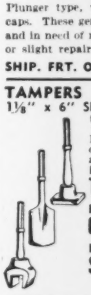
U. S. ARMY SURPLUS "DU PONT" BLASTING GENERATORS

Plunger type, will fire 1 to 20 caps. These generators are used and in need of minor adjustment or slight repair. **$5.75 EACH**

SHIP. FRT. OR MTR. TRUCK F.O.B. PHILA.

TAMPERS • DIGGERS • DRIVERS

1⅛" x 6" Shank, fits std. hammers. Each tool brand new and guaranteed. The government buys only the best. Replace your old tools at a fraction of their regular price. These tools are army surplus.



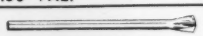
REG. $14.50 **TAMPERS** 8" x 8" With Stem **$6.00**

REG. $9.30 **CLAY SPADE** 5½" x 8½" **$3.75**

REG. $18.00 **SHEATHING DRIVER $6.00**

ALL TOOLS F.O.B. PHILA.

SPEAR AND SPADE END—13 Lbs.
RAILROAD TAMPING BAR
REGULAR $5.50 VAL. **$1.95** FOB PHILA.



3 FOOT HEAVY DUTY
STAR POINT ROCK DRILL
1⅛" Bar—2" Cutter—$3.00 Val. **$1.00** EA. FOB. Phila.

U. S. ARMY—6 LB. DOUBLE POINT or POINT & CHISEL **PICKS**
Your Choice **$9.00** A DOZEN FOB PHILA.

BRAND NEW HICKORY **PICK HANDLES** Straight Grain—Smooth Finish. FOB Phila. **$5.00** A DOZ.

WILL SHIP RATED FIRMS OPEN ACCOUNT FOB PHILA. OTHERS PLEASE SEND CHECK

J. JACOB SHANNON & CO.
214 N. 22nd St. Phila. 3, Pa.
THE OLDEST EQUIP. HOUSE IN PHILA.

WHOLESALE PRICES—
PNEUMATIC TOOLS
NEW OR REBUILT
ELKIN 3263-81 ST. JACKSON HTS., N. Y. HA-9 7810

When your plans call for dependable EQUIPMENT in a hurry, don't write; 'phone our nearest Rebuilding Plant at our expense.

CRAWLER CRANES, DRAGLINES AND SHOVELS

1—2¼ yd. Link Belt Model K570 Diesel Crane, Ser. No. 2215, with high gantry, hydraulic controlled. Powered by Caterpillar D17000 Diesel engine. Equipped with 80' boom. For either crane or dragline work. Will handle 2½ yd. dragline bucket.
1—1¾ yd. Link Belt Model K370, Ser. No. 2247, equipped with 70' boom, powered by Cat. D13000 Diesel engine.
1—1½ yd. P&H Model 655-A, combination shovel, dragline and crane. Ser. No. 6426, powered by Caterpillar Model D13000 Diesel engine. Crane boom 75', shovel front 24' boom, 18' sticks, 1½ yd. manganese dipper.
1—1½ yd. Link Belt Model K360, Ser. No. 1959, powered by Caterpillar D13000 Diesel engine with 65' boom. Also have back hoe attachment, boom 25' scoop arm 8/9", pull shovel mast 11'9", with 1½ yd. dipper.
1—1¼ yd. 25 Northwest, Ser. No. 4564, Powered with 6 cyl. Wisc. Model DS4 and Twin City Model TA gasoline engine. With 50' boom.
1—1¼ yd. Link Belt Model K38 crawler crane, Ser. No. 1520. Powered with 4 cyl. Model WL-5I-B Waukesha gasoline engine with 50' boom.
1—1 yd. Byers Master Model, Ser. No. 3596, powered by 4 cyl. Hercules Model TXO gasoline engine, with 40' boom.
1—1 yd. Erie Gas-Air Model GA-2, combination shovel and crane, Ser. No. 10679, powered with 4 cyl. Waukesha Model WL55 gasoline engine, with 42' crane boom. Shovel boom 22', sticks 17' with 1 yd. dipper.
3—¾ yd. Koehring Model 301, Ser. Nos. 544, 772 and 840. Powered by 4 cyl. Wisconsin Model M gasoline engines. With 40' boom.
1—½ General Model 307, Ser. No. 2575, powered by 71 HP 8 cyl. Chrysler Industrial engine, with 40' boom.
2—¾ yd. Buckeyes, Model 70, Ser. Nos. 5409 and 5411, with 40' boom, powered by 71 HP Chrysler Industrial gasoline engines.

WE OWN 15 CRANES NOT SHOWN ON THIS LIST. SEVERAL CRANES LISTED ARE IN OUR RENTAL DEPT. ONLY.

DERRICK AND HOIST

1—50 ton American Model 20-100 all steel guy derrick, Ser. No. 1184, with 115' mast, 100' boom, 16' bullwheel. Capacity 50 tons at 38' and 20 tons at 98' radius.
1—American Model 140 three drum electric hoist with attached swinger, air engaged frictions, power 75 HP AC electric motor with control equipment. Capacity 12,000# SLP at 170 FPM. LATE MODEL LIKE NEW REASONABLY PRICED.

AIR COMPRESSORS

Portable and stationary, electric, diesel & gasoline power, sizes from 20 cu. ft., 1,000 cu. ft.

LOCOMOTIVE CRANES

1—35 ton Ohio, Mdl. G, ser. No. 3950, boom 50', ASME boiler, cast steel trucks, outriggers.
1—15 ton Link Belt #678, ASME boiler, cast steel trucks. BARGAIN.

TRUCK CRANE

½ yd. Universal Crane #R73, with 25' boom, mtd. on 10 wheel Hendrickson pneu. tired truck.

STIFFLEG DERRICKS

6—30 ton BRAND NEW Wiley all steel stiffleg Derricks, boom 60' in 2 sections, mast 32', legs 37'-3⅞", sills 27', bullwheel 12', blocks 6 sheave tandem mast and boom topping blocks, load block 1—triple and 1—quadruple with swivel hook. Cap. 30 tons @ 38' radius, 15 tons @ 57' radius.
1—4 ton Ingram all steel, Mdl. 504, 23'-8" mast, 50' boom. Cap. 4 tons @ 28' radius.

PARTIAL LIST ONLY — SEND FOR NEW STOCK LIST — JUST PUBLISHED

All this equipment is owned by us and may be inspected at one of our plants.

WE BUY—REBUILD, SELL AND RENT.

Schaff Bldg., 1503 Race St. PHILADELPHIA 2, PA. Phone Rittenhouse 6-4664
1155 So. Washtenaw Av. CHICAGO 12, ILL. Phone NEvada 8-240
30-J Church St. NEW YORK 7, N. Y. Phone Worth 2-0036
P.O. Box 933-J PITTSBURGH 30, PA. Phone Federal 2000

EQUIPMENT CORPORATION of AMERICA

TRACTORS

2—DW10 Caterpillar with D4600 diesel engine, electric starter, 10.00 x 24 14-ply front tires, 18.00 x 24 20-ply drive tires and PD10 Athey side dump trailers with 14.00 x 20 16-ply dual trailer tires. New—1947.

L. B. SMITH, INC., Camp Hill, Pa.

PHILADELPHIA, PA. SYRACUSE, N. Y.

ROLLER AT SACRIFICE

Huber 10 ton 3 wheel diesel roller with scarifier—used only 200 hours

HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

VULCAN
PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
327 N. BELL AVE., CHICAGO, ILL.

Caterpillar Diesel Engines

Model D-13,000 and D-8800

Complete - Very few hours

JULIUS HEBENSTREIT, INC.
56-15 58th St., Maspeth, L. I., N. Y.
Tel. Davenport 6-1461
Cable Address: Habenjul New York

NEW PARTS

FOR

Tractors, Graders, Scrapers, Shovels, Cranes, Trench Diggers, etc.

(Allis Chalmers, Caterpillar, International, Barber-Greene, Insley, Buckeye, Northwest, Loraine, Turnapull.)

Cutting Edges All Sizes—Fairleads

CEMENT MIXERS

2 Ransome and 1 Rex

Excellent Condition

JULIUS HEBENSTREIT, INC.

56-15 58th St. Maspeth, L. I.

Tel. DAvenport 6-1461

Cable: Habenjul New York

IMMEDIATE DELIVERY

BPS and WIDE FLANGE BEAMS

8"	31#, 36#	40/60'
10"	42#, 49#, 54#, 57#	24/65'
12"	53#, 65#	36/50'
14"	73#, 87#, 89#, 95#	28/60'
21"	112#, 132#	40/60'
24"	100#	30/60'
27"	94#	55'
30"	116#	35'
36"	160#, 170#, 182#, 194#, 260#, 300#	35/80'

I BEAMS, ANGLES, PLATE, CHANNELS, SHIP CHANNELS

HY DRACHMAN STEEL Corp.

Warehouse 14-23 34th Ave. Astoria, Long Island
Sales Office 563 E. Tremont Ave. New York 57, N. Y.
AStoria 8-8023—8-8096 CYpress 9-5440-1

FOR SALE or RENT ALL LATE MODELS

1—N. W. Shovel, 2½ c.y. new Oct. 1946

1—N. W. Shovel, 1½ c.y.-new April 1946

1—Allis Chalmers Tractor Model HD19H, new May 1948

5—D W 10's—used 2500 hours

1—Caterpillar Auto Patrol #12—9K4626

1—Caterpillar D8 Angledozer #8R8933

1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.

Box 145, Middle River, Baltimore 20, Md.

Phone: Essex 1310

FOR SALE

CRANES

Colby Model 200 electric powered Whirley cranes, 45 ton at 30 foot radius. Excellent condition.

GENERATORS

1000 KW Elliott Generators, New, 720 RPM.

DIESEL ENGINES

1600 HP General Motors Engines, 720 RPM.

PACIFIC BRIDGE COMPANY

333 Kearny Street San Francisco, Calif.

NEW PARTS

FOR

P & H Models 150—655A

North West Model 25

Galion Graders & Rollers

Climax, Waukesha, Hercules, Chrysler Spitfire and Wisconsin Engines.

NORTH JERSEY EQUIPMENT CO.

343 Elizabeth Avenue

Newark 8, N. J.

Tel. Bigelow 2-2323

NEW Guaranteed—1¼"

PNEUMATIC DRILLS

UP TO 60% off

WRITE NAVY SURPLUS INGERSOLL RAND CHICAGO PNEUMATIC

BERKELEY DISTRIBUTORS, Inc.

116 JOHNSON AVE. HACKENSACK, N. J.

FOR SALE

2 Koehring Gantrys Convertible to Caterpillars

FS-9630, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

SALE *RENT*

GENERAL MOTORS DIESEL GENERATOR SETS LATEST MODEL

Under 1000 Hours Use
75 KVA—220 Volt—60 Cycle
Complete Panel Board

ALSO

New GM Diesel Twin-Four
Model 8103—200 H.P.
Suitable RE-POWER 2-2½ Yd.
Shovel—125 KW Generator

GRIFFIN EQUIPMENT CORP.

881 East 141st St. New York 54, N.Y.

CLEARANCE SALE

OF

BUCKEYE TRENCHERS

BUCKEYE C-15, Ladder type with cast buckets, rooters 20' Deep. 42" wide. Twin City 4 cyl. motor. Machine in new condition, will stand rigid inspection.
F.O.B. cars $5,250.00

BUCKEYE C-10, Perfect condition. Dig 14' Deep 30" wide. Twin City 4 cyl. motor. Ready to work.
F.O.B. cars $3,750.00

BUCKEYE MODEL D BACKFILLER, with scraper blade, Waukesha motor. Ideal for backfilling trenches.
F.O.B. cars $1,750.00

GARGARO CO. Contractors
40 E. Seven Mile Rd. Detroit 3, Mich.
Phone: FOrest 6-0700

FOR SALE

Available after September 1, 1949

1—Marion ¾ c.y. shovel 1942 Model 331 with Backhoe attachment complete.
1—Adams Grader, 1941 Model #303-H-371.
1—Parsons Trencher, Model #25, Serial #1560.
1—TD 14, 1946 International Hydraul'c Control Bulldozer Serial #TDF-12512 T11F.

All equipment recently overhauled and in first class condition, attractively priced. Further details upon request.

E. B. McGURK, INC.

P. O. Box #630, 355 Barbour Street Hartford, Conn.

Telephone—Hartford 7-7106

S. F. Mitchell, Pur. Agent

FOR SALE

PAVER 34-E Koehring Dual Drum Located Near Memphis, Tennessee. $8,000.00.

SHOVEL ATTACHMENT ¾ Yard Buckeye. Unused. $750.00. Located Kenner, Louisiana

T. L. JAMES & COMPANY, INC.

Kenner, Louisiana

FOR SALE

Trench Hoe for Model 4, 5 or 6 Northwest in working condition. Would accept shovel front in trade.

TULLER CONSTRUCTION CO.

RED BANK, N. J.

RENT or SALE

CAT. D-7

DDPCU Cabledozer undercarriage. Blade and Motor Kit, all new. This Machine is Equal to New.
'47 ½ Ton INT. Pick-up Truck, low mileage.
1—Bucket Bale Sheave (new) for 37B.

BARGAIN PRICES

NEDCAR EXC. CO., Rm. 1514
15 WM. ST. N. Y. (5) N. Y. Hanover 2-9194

If there is anything you want

or something you don't want that readers can supply—or use—*advertise it in the*

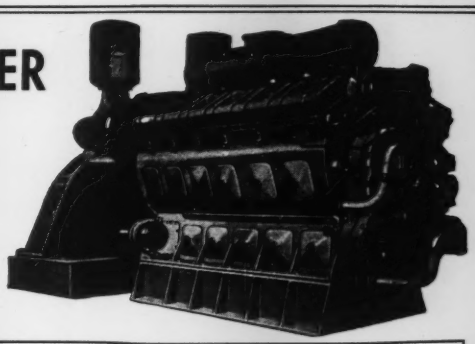
Searchlight Section

DIESEL ELECTRIC POWER

FOR

IMMEDIATE DELIVERY

UNIT CAPACITIES—10 TO 1420 KVA
A. C.—50 AND 60 CYCLES
ANY VOLTAGE



A PARTIAL LIST OF OUR INVENTORY

KVA	Make	Model	HP	RPM	KVA	Make	Model	HP	RPM
1420	Fairbanks Morse	38D8⅛	1600	720	375	Enterprise	DSG-6	450	450
1250	General Motors	16-278A	1600	720	312	General Motors	8-268A	450	1200
1000	General Motors	12-278A	1200	720	187	Ingersoll Rand	S	225	514
937.5	General Motors	12-567	1100	720	125	General Motors	3-268A	150	1200
625	Alco	6-12½x13	750	600	75	General Motors	6043C	90	1200
425	Baldwin	VO-6	510	450	62	Int'l Harvester	UD-18	76	1200

WRITE FOR COMPLETE INFORMATION

Engineered AGSCO DIESEL POWER

A. G. SCHOONMAKER Company, Inc.

Diesel Engines • Power Machinery

ESTABLISHED 1898

DIESEL DIVISION **50 CHURCH STREET, NEW YORK 7, N. Y.**

SHOVELS & CRANES

1—Northwest Model 78D—2 yd. diesel shovel
2—Northwest Model 25—crawler crane, shovel, Pullshovel
2—Northwest Model 6—shovel and crane
1—Lorain 1¾ yd. diesel shovel
1—Lorain 2 yd. diesel shovel
1—Quickway Model J Crane on GMC truck

HODGE & HAMMOND, INC.
1100 E. 156 St., New York 59, N. Y.

CRANES & LOCOMOTIVES

100 ton Baldwin diesel elec. locomotive 660 HP. New 1942.
100 ton Alco diesel elec. locomotive built 1939. 660 HP.
35 ton Ohio Type G locomotive cranes built 1943. Buda engine.
50 ton Whitcomb diesel elec. locomotive new 1942. First class shape.

MISSISSIPPI VALLEY EQUIPMENT CO.
501 Locust St. St. Louis 1, Mo.

FOR SALE

LOCOMOTIVES

2—Whitcomb Gas. 6 ton, 24" gauge
1—Davenport 10 ton, Diesel 36" Ga. Used 90 days.
1—Plymouth 25 ton, Diesel, Std. Ga.
1—Plymouth 30 ton, Diesel, Std. Ga.
2—Vulcan 30 ton, Diesels, Std. Ga.
1—Whitcomb 50 ton, Diesel-Electric, Std. Ga.
1—Baldwin 100 ton Diesel-Electric, Std. Ga.
1—American 100 ton, Diesel-Electric, Std. Ga. Also Steamers of various sizes

COMPRESSORS

2—IR 2000', 3/60/220
2—Chi. Pneu., 1300', 3/60/220
1—IR 6000', 3/60/2200—Low pressure
1—IR 500' Diesel Portable

DERRICKS

1—American S.L. 100 ton, 110' boom
2—American S.L. 10 ton, 75' boom
3—Terry, Guy, 22 ton, 1150' mast, 100' boom
4—Lidgerwood, Guy, 20 ton, 115' mast, 100' boom
5—Lidgerwood, Electric Hoists, for the above
1—Ingram, 4 ton S.L., 50' boom, complete with 2 Drum Gas hoist with swinger, NEW
Wiley,—4-ton—S.L.—50' Boom—NEW

CARS

28—Western 20 yd. Air dump
10—Mayor 30 yd., air dump

CRANES

1—Marion 392, 2½ yd. Diesel Crawler
1—Industrial Type L, 50 ton, New 1942
N.W. 55—1½ yd. Shovel—Drag—Diesel.
1—Browning, No. 8, 20 ton, oil fired

MISCELLANEOUS

4—Fruehauf—6 ton Van—Semi-Trailers. Excellent for field offices.

Write R. H. BOYER, Mgr. Equip. Division

CHARLES DREIFUS CO.
12 S. 12th Phila. 7, Pa.
Write, Wire or Phone Phone Bell-Walnut 5050

Pile Driving Equipment

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Pile Driving Accessories
Drop Pile Hammers and Caps
Steel Sheet Piling

CONTRACTORS MACHINERY Co.
2637 Southwest Blvd. Kansas City 8, Mo.
Phone Valentine 4740

FOR SALE OR RENT

DITCHING MACHINES

Parsons Model 310, 16' x 52"
Buckeye Model 120 and 160
P & H Model 10-30, 12' x 36"
Cleveland C-15, 21' x 42"
Cleveland Wheel Type Models 95 and 110
Buckeye Model 410, 8' x 28"
Buckeye Model 224, 22' x 72"

A. C. R. COMPANY
19615 Nottingham Road, Cleveland, Ohio
Phone: KEnmore 8000

FOR SALE *CHEAP*

2—New D-13,000 Caterpillar Diesel Engines. 125 H.P. Complete with Clutches and Pulley-drives.
1—Schramm Diesel 315 cu. ft. 2 stage compressor, pneumatic tires, new 1947.
1—LeRoi Diesel 315 cu. ft. 2 stage compressor, pneumatic tires, new 1946.

HARRY C. LEWIS
899 East Grand Street Elizabeth, N J.

FOR SALE

1 Buckeye ¾ yard model #70 Shovel 1¾ yard Back Hoe and spare parts or will trade for ½ yard machine.

S & S CONSTRUCTION CO.
Box 422 So. Fallsburg, N. Y.

NEW* and *REBUILT
STORAGE BATTERY

LOCOMOTIVES

1½ to 10 Ton — 18" to 56" Track Gauge
GREENSBURG MACHINE CO.
Greensburg, Penna.

NEW WAR SURPLUS UTILITY TRAILERS

$79.50 EACH

3 OR MORE $75.00 EACH

This trailer is excellent for mounting air compressors, welders, and light plants. Also a utility trailer which can be attached to a pick-up or passenger car for all sorts of light tools, equipment and material hauling. Capacity 2 ton. Four pneumatic Firestone tires, size 9:00 x 9. Timken bearing wheels; heavy steel frame. Originally designed for the arms as a bomb trailer. **SPECIFICATIONS—57" from front to rear axle. 29½" width between wheels. 97" overall length, 42" overall width. Weight 465 lbs. Complete with tires: Firestone 6:00 9-.4 Ply. Timken-bearing wheels.**

NEW 15 TON JACKS

JOYCE #1928A

SPECIAL LOW PRICE

$16.50 EACH

Mfgrs. List Price $75.00

15 Ton Ratchet Lever Jack. Automatic Lowering Ratchet Jack. 15 Ton Capacity. Height closed 28". Rise 19". Wt. 94 Lbs. 60" Handle. Extra heavy base with foot forged to the rack bar, insuring maximum strength at this point. Jack handles easily because it is in perfect balance when lifted by convenient handles.

TERMS—Net 10 days to rated concerns. Others please send check with order. All items F.O.B. Cincinnati unless otherwise specified.

ROSE BROTHERS COMPANY
1400 Harrison Ave. Cincinnati 14, Ohio

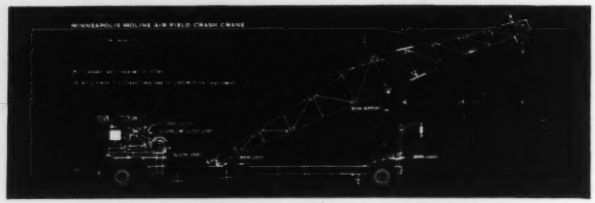


Illustration Shows Boom Raised and Crane in Lifting Position

LISS EQUIPMENT CO. 132 N. W. 20 St., Miami 3, Fla.

New and Guaranteed Used
Steel PIPE and TUBING
For Every Purpose
New and Guaranteed Used
Steel TANKS
Welded - Riveted - Bolted
For High Pressure; also ordinary storage
Up to 74,000 bbl. capacity
Large stocks carried everywhere for IMMEDIATE SHIPMENT
A. GREENSPON PIPE CO., INC.
(In Business 73 years)
3615 Olive St. St. Louis 8, Mo.
FRanklin 0064 or 1606

LATE MODEL—EXCELLENT CONDITION

2—Lorain Moto-Cranes—Ser. 13000....ea.	$13,000
Link Belt LS 50, new backhoe and boom used two months	6,500
TD18 Bulldozer—1000 hrs. new blade	7,000
Austin Western Grader, 99-M Cab & scarifier	4,500
Galion 102 diesel grader, scarifier	4,000
Caterpillar #11 Grader, diesel 12' blade scarifier,	2,800
Williams 1½ yd 40 E Bucket	1,250
American Terry, 70 ton stiff leg derrick	15,000
Industrial 50 ton Locomotive crane	8,000

We Own the above equipment. Send for complete equipment list

R. A. PARKINSON & SON
519 N. Delaware Ave., Philadelphia 23, Pa.

Scoopmobiles & Buggymobiles

NEW & USED
For Sale or Rent
HODGE & HAMMOND, INC.
1100 E. 156th Street, New York 59, N. Y.

OUTSTANDING SACRIFICE

1—CATERPILLAR D8 ANGLE DOZER
GUARANTEED LIKE NEW—238 Hrs.
$10,990.00 F.O.B. Louisiana
N. A. FINN COMPANY
369 Lexington Ave., N.Y.C. Le 2-3868

Tunnel and Construction Equipment

FOR SALE

40 to 50—Ingersoll Rand D505—4" Drifters & Column Clamps, Arms, Hose, Steel and Bits
4—Electric Tunnel Ventilating Fans
10,000 feet 26 and 30" steel ventilating pipe
10,000 feet 6" steel invasion pipe with Victaulic couplings, 1400 lb. hydrostatic test
2—500 ft. Gardner-Denver Diesel Portable Compressors
5—500 ft. Ingersoll Rand Oil Engine Portable Compressors
1—Lorain, 2 yd. Diesel Shovel and Crane
1—1 yd. Osgood Gas Crane
1—D7 Caterpillar Tractor and Athey 2 Way Wagon, 12 yd.
4—D8 Caterpillar Tractor and Athey 2 Way Wagon, 16 yd.
2—D8 Caterpillar and LeTourneau Scrapers
1—Super C Tournapul with Scraper
1—Super C Tournapul with Rock Wagon
1—HD 14 AC Tractor with Pusher
1—D8 Caterpillar Tractor with Bulldozer
1—Model 160 pumpcrete with pipe fittings
3—WD60 Koehring Dumptors
4—28 and 36 FD Rear Dump Euclids
1—100 Ton, 3 compartment Erie Bin with Weigh Batcher
1—2 yd. Smith Tilting Mixer with electric motor
1—1750 foot Ingersoll-Rand Stationary compressor with 300 H.P. motor and control and V-belt drive

Other miscellaneous tunnel and construction equipment and supplies. All in excellent condition and priced right and located near Roanoke, Virginia.

McILHANY EQUIPMENT CO., INC.
Box 1186 Roanoke, Virginia
Day Phone: 3-3669
Night Phones: 2-5804 and 3-3712

1—Acme factory rebuilt 12 ton, 3 wheel roller
1—Gasoline powered 5-6 ton tandem, rebuilt.
ACME ROAD MACHINERY CO.
FRANKFORT, N. Y.

D-8 DOZER

Serial #2U5599 Cat. Tilt Blade 2-Drum Cat. Hoist or Cat. Hydraulic Blade.

STEWART S. SILL
Sodus Point, New York

FOR SALE
#3 TERRY STEEL GUY DERRICK

100 ft. Boom. Last Job handled 25 tons at 75 ft. Complete with accessories. Location South Carolina.
FS-9974, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

DERRICK

15 ton steel stiffleg derrick, 35' mast, 65' boom, 18'6" extension
$2,250.00
Capacity 15 tons with 85' boom at 45 degrees radius.
A. F. WAGNER IRON WORKS
1905 S. First St. Milwaukee, Wis.

FOR SALE
CLEAVER-BROOKS TANK CAR HEATER (NEW)

2-car Capacity—Semi-trailer
R. F. KLINE
Frederick, Md. Phone 1330

FOR SALE
90 TON TRAILER

Rogers "I" Beam Model 1-B-90, 1400 x 24 Tires with Mack Diesel LM-20 Tandem Tractor, Winch, 11:00 x 24 Tires. New 1946. Low Mileage.
FS-9900, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

FOR SALE

1—1½ Cu. Yd. Amsco Shovel bucket, new, complete with teeth and sheave for P & H Shovel. Price $1450.00

Phone Williams 1-8600
Hillsgrove, Rhode Island

TRUCK-CRANE

FOR SALE
20 TON LINK BELT H. C. 70
80 FT. PIN CONNECTED BOOM
15 FT. JIB
1948 MODEL, NEW CONDITION
PRICED TO SELL.
L. W. CONNELLY & COMPANY
9550 WARD DETROIT 27, MICH.
Phone Webster 3-4999

New Guaranteed . . . 60 TON
HYDRAULIC JACKS
Navy Surplus
ILLUSTRATED CATALOG 60% off
BERKELEY DISTRIBUTORS INC.
16 JOHNSON AVE. HACKENSACK, N. J.

FOR SALE

Parsons Ditcher, Mod. 310 Ser. No. 3002, 1¼ Yd. Cleveland Trenching Machine, Diesel, Mod. 110 A, Ser. No. 4627 430 hours actual use.
Cleveland Trenching Machine Mod. 95, Ser. No. 2628 Buda Motor.
BYRNE-PEORIA COMMUNITIES, INC.
P.O. Box 1259 Peoria, Illinois

FOR SALE
1 Portable 1250 Yd. CUMMER DRYER
Price $1500

P. S. KRAMER
7 Smith St. Paterson, N. J.

BUY *DEPENDABLE* USED EQUIPMENT

FROM A DISTRIBUTOR WITH REBUILDING "KNOW-HOW"

TRACTORS

International 1947 TD6, 50" Tread Isaacson Bulldozer $3,500

International 1948 TD9 Bucyrus Erie Dozer-shovel $6300

Caterpillar 1941 D4 LaPlante Choate Hydraulic Bulldozer $3950

Caterpillar 1947 D4 LeTourneau Cable Bulldozer $3750

Caterpillar 1947 D6 LaPlante Choate Hydraulic Angledozer (1600 hrs.)....$8500

CRANES

Insley 1946 Model K-12 ½ yd. Backhoe Crawler Mounted $6000

BUY OF THE MONTH

Rex 200 Double Pumpcrete, gas powered with remixer, 1100' of 8" pipe and fittings New York City area. Rebuilt.....$9750

PILE HAMMERS

McKiernan Terry #6.....$550
McKiernan Terry #7.....$700

PUMPS

Jaeger 10" 200M Hercules Gas Engine $850

TRUCK MIXERS

3—Jaeger 4 yd. with Hercules gas engine and starter, rear operating controls, two speed transmission, new blades and buckets, thoroughly overhauled—$2200 each.

COMPRESSORS

Ingersoll-Rand 1941 315' Portable 4 Solid Rubber $1000
Ingersoll-Rand 1941 500' Portable 4 Pneumatics $2500
Ingersoll-Rand 310' Portable 4 Steel Wheels $250
Ingersoll-Rand 1937 105' Portable 4 Solid Rubber $750

MISCELLANEOUS

Hough HA Payloader 1945.....$1950
International I4 Wheel Tractor 1946 Trojan Hydraulic Bulldozer $1250
Adnun Asphalt Spreader 1937.....$1500
Shovel Front Chain Crowd for Lorain 40 $1100
Shovel Front with Cable Crowd....$1.850

EXPORT SERVICE **SUBJECT TO PRIOR SALE** **IMMEDIATE DELIVERY**

Distributors of: Thew-Lorain Cranes & Shovels - International Harvester Tractors—Chain Belt "Rex." Equipment — Barber-Greene Bituminous & Material Handling equipment—Adams Graders—Hough Pay-loaders and others.

EHRBAR

SINCE 1903

UNION, N. J. Unionville 2-7400 | BROOKLYN, N. Y. Evergreen 3-5900 | WESTBURY, L. I. Westbury 7-1990

USED EQUIPMENT FOR SALE

3—Bucyrus Erie Steam Shovels ¾ Yd., 1 with Caterpillar, 2 with Wheels. Condition—Good. Price $1,000.00 each.
3—Wisconsin FV-4 Air Cooled Motors—Practically new. Price $200.00 each.
1—Allis Chalmers 3-AC Pulverator, Cap. 6-7 tons per hr. Condition—Good. Price $1,000.00.
1—Falk Speed Reducer 29-DA—100 H.P. with Motor Base, complete with Falk Coupling and Fast Coupling. Condition—Excellent. Price $1,000.00.
1—Link Belt Rotating Screen 4' x 16'. Complete with extra screen plates 4" to 7" openings. Condition—Good. Price $400.00.
1—Yale Electric Lift Truck—Model KM30-2M 2,000# Cap. with Hoist and Trolley. Includes 2 Exide Batteries, 1 Charger and 16 Self Dumping ¾ ton Steel Hoppers with Casters. Condition—Excellent. Price upon request.
1—Continuous Clyde Hydrator Plant Cap. 5 tons per hr. Complete with Feeder, Raw Lime Bin, Beater Mill, Cyclone, 25 ton Storage Tank, Crusher and Elevator. Condition—Good. Price upon request.
1—Pebble Lime Plant including Roll Crusher, Elevator and Screen. Condition—Good. Price upon request.
12,000 (Approx.) New Silica Fire Brick (Yough). Various sizes and shapes. Great Saving.

THOMASVILLE STONE AND LIME COMPANY
THOMASVILLE, PENNSYLVANIA

DIESEL GENERATOR PLANTS

COMPLETE WITH SWITCHBOARDS

1000 KW TO 100 KW STATIONARY AND PORTABLE

AT GREATLY REDUCED PRICES NEW UNIT GUARANTEE

HERCULES ELECTRIC MACHINERY and EQUIPMENT CO.

Telephone NEvada 6-2808
Cable Address HEMCOY

1412 So. Alameda Street
Compton 1, Calif.

FOR SALE

STEEL STRUCTURE

39' Square—55' High
Containing 71 Tons
Was Used As Derrick Tower
Also Suitable As Steel Frame
For Building Structure
Contains 2 Intermediate Floor Levels
Reasonable Price

SANDERSON & PORTER
Box 243, Front Royal, Va.
Phone 705

BOILERS

10 to 1000 H. P.
NEW-USED RECONDITIONED
Steam, Gas and Electric Power Equipment

J. PARKER THOMPSON CO., INC.
507 FIFTH AVE., NEW YORK CITY
MURRAY HILL 7-6547-8-9

TRUCK CRANE

Rebuilt Northwest Model 25 Truck Crane mounted on 10-wheel Mack complete with outriggers.

SALE or RENT

HODGE & HAMMOND, INC.
1100 E. 156th Street
New York 59, N. Y.

DEPENDABLE USED MACHINES

Special—Browning 20 ton steel erectors crane, 80' boom, 20' jib

P&H 200 dragline
Byers 83 dragline
Osgood 200 backhoe
Lorain 1½ yd. backhoe
Bay City 25 dragline

Badger port. gravel plant
Pioneer 42"x14' feeder
Morris 10" gravel pump
4x10, 2-deck screen
Int. UD-18 power unit

RD-7 with bulldozer
Carter 4" s.p. pump
Vulcan 3000# hammer
I-4 with Hough loader
Jaeger 7H hoist

For rent—15 current model Bay City cranes, shovels and backhoes

3505 W. 51st St. TRACTOR & EQUIPMENT CO. Chicago, 32

PILING

We do a Nation-Wide business in

STEEL SHEET PILING

New & Used Rented & Sold

114 pcs. 43 to 17 ft. Carn. MZ38—Ohio
77 pcs. 70 ft. Beth. DP2—New Jersey
68 pcs. 60 ft. Inland 122—Illinois
196 pcs. 35 ft. Carn M116—Nebraska
59 pcs. 32 ft. Beth DP2—Connecticut

Other lengths & sections at various locations

All sizes Vulcan & McKiernan Pile Hammers & Extractors for Rent and Sale—Shop Rebuilt

Regardless of location of your job, wire or write

MISSISSIPPI VALLEY EQUIPMENT CO.
509 Locust St., St. Louis, Mo.
"WE BUY STEEL PILING FOR CASH"

FOR SALE

STEEL SHEET PILING and H-BEARING PILING

Large tonnage new "H" Beams for sale at mill price, f.o.b. Detroit. Also considerable tonnage of M-115 and "Z" sheet piling offered.

CANDLER and BASS, Inc.
Birmingham Theatre Bldg.
Birmingham, Michigan

FOR SALE

Manitowoc Speedcrane Model #2000B—1½ yd.—50 ft. boom—20 ft. jib—gasoline—reconditioned

Northwest Model #105 crawler crane—1 yd.—50 ft. boom—gasoline—reconditioned

Link Belt Truck Crane Model #TC-70 mounted on 10 wheel Mack Truck—¾ yd.—70 ft. boom—30 ft. jib—105 ft. with extension jib—gasoline—reconditioned

Diamond T four yard 6x6 Dump Truck

Mack Model LPSW Boulder Dam 15 cu. yard rock body—Cummins Diesel Engine—6x4—1400 x 24 Tires—Duplex Transmission.

COMBINED CHELSEA MOTORS, INC.
Van Dam St. & 48th Avenue
Long Island City, 1, New York
Stillwell 4-4870

D-7 Caterpillar tractor

#7M5983, cable angledozer, D.D.P.C.U., Lloyd's certificate of inspection; also 22 Caterpillar with hydraulic angledozer, D-4 with hydraulic angledozer, also D-4, wide gauge, bare; generators A.C. and D.C., diesel or gas.

LISS EQUIPMENT
132 N. W., 20th St., Miami, Fla.

BROWNING TRUCK CRANE

15 Ton Model T-15. Like new. Tandom axil 10:00 x 20 Tires. Includes 70 feet of Boom and ¾ Yard Digging Bucket. Original cost $21,000.00. Inspection New York Area.

FS-1030, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

FOR RENT

STEEL SHEET PILING

CANDLER AND BASS
Birmingham Theatre Bldg.
Birmingham, Mich.

WANT BUY
ALL SECTIONS
STEEL SHEET PILING
DARIEN CORP.
60 E. 42nd St. N. Y. 17, N. Y.

WANTED

FOR SALE OR RENT

STEEL SHEET PILING

500 PCS. BETH. DP2—70—60—30—20 Ft.
260 PCS. BETH. DP2—20 to 27 Ft.
1700 PCS. BETH. SP4, 31 Ft.
82 PCS. BETH. AP, 3, 30 Ft.
900 Tons Carnegie MZ 32—65 to 85 Ft.
E2 McK-T & 800A VULCAN EXTRACTORS
STANHOPE, 60 E. 42nd St., N.Y., N.Y.

PIPE

Compressors Wanted

STATIONARY - PORTABLE
LARGE OR SMALL

L. W. BAUER
22 Barnett Street Bloomfield, N. J.

RAILS-TIES

TRACK ACCESSORIES

WROUGHT Steel Pipe

FITTINGS
VALVES
BOILER
TUBES

ALBERT & DAVIDSON PIPE CORPORATION
2nd AVENUE..50th-51st STREET
BROOKLYN 32, N. Y.
Windsor 9-6300

WANTED

Shovel front for Model 4 Northwest, in good condition, for use in Michigan. Could offer Trench Hoe attachment in part payment. Fits Models 4, 5 or 6.

TULLER CONSTRUCTION CO.
RED BANK, N. J.

EVERYTHING FOR THE TRACK FROM

SWITCH TO BUMPER

R. R. TIE PLATES
Excellent Relay

160,000 6½" x 9½" for use with 70# to 80# Rails
50,000 7½" x 10½" for use with 85# to 115# Rails

MORRISON RAILWAY SUPPLY CORP.
RAND BLDG. BUFFALO 3, N. Y.
EMPIRE BLDG. BIRMINGHAM 3, ALA.

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW-USED
GREENPOINT IRON & PIPE CO. INC
Bogart and Stagg Streets Brooklyn, N.Y.

WANTED

ONE YARD BACKHOE ATTACHMENT

for Model 70. 1¼ yd. Lorain Crane. Telephone Lancaster 1931.

LANCASTER DEVELOPMENT INC.
32 Central Ave. Lancaster, N. Y.

WANTED

A rehandling type bucket

in first class condition, for concrete aggregate, size ¾, ⅞ or 1 yard.

Write P. O. Box 755, Langley Field, Va.

NEW—RAILS—Relayers

All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

M. K. FRANK
480 Lexington Ave. New York, N. Y.
Park Bldg. Pittsburgh, Pa.
Reno, Nevada Carnegie, Pa.

FOR SALE

25,000 Ft. 2" Good Used BLACK STEEL PIPE

R. GELB & SONS, INC.
Union, N. J. Unionville 2-4900

WANTED

Ingersoll-Rand T 20, 220 cu. ft. COMPRESSOR for replacement parts. Good running order not necessary.

C.P. 2 & I.R. 25 SUMP PUMPS Good running order.

MASONRY RESURF. & CON. CO., INC.
B. & O. Coal Pier Curtis Bay 26, Md.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on following pages

Polk, Powell and Hendon

Engineers—Consultants

Harry H. Hendon—
Hugh A. Powell

Water Systems, Sewers and Sewage Treatment Plants, Steam and Hydro Plants, dams, drainage, industrial buildings, municipal planning reports, plans, estimates and construction supervision.

620 Chamber of Commerce Bldg.,
Birmingham 3, Ala.

Palmer and Baker, Inc.

Consulting Engineers

For Problems of Transportation
Subaqueous Vehicular Tunnels
Rock Tunnels
Utility Tunnels
Bridges
Grade Separations
Highways
Airports
Traffic Studies
Parking Problems
Waterfront & Harbor Structures

Mobile, Alabama

John S. Cotton

Consulting Engineer

Hydroelectric, water supply, irrigation, and multiple purpose projects; flood and erosion control; river basin development planning; dams and their foundations; tunnels; marine structures; valuations; rates.
28 Brookside Dr., San Anselmo, Calif.

Heron Engineering Co.

Chemical, Mining, Industrial and Hydraulic Plants, Irrigation, Water Supply, Power and Sewerage Systems, Large Rockfill Dams, Airports, Oil, Gas and Water Pipe Lines.
2000 So. Acoma, Denver 10, Colorado
Chama, New Mexico

Industrial Drilling and Boring Corp.

FOUNDATION BORINGS
GEOLOGICAL SURVEYS

P. O. Box 1206 1746 E. Adams St.
Jacksonville, Florida

Patchen & Zimmerman

Engineers

Construction Plant, Cofferdams, Structures, Industrial Plants, Dams, Sewerage and Sewage Treatment, Water Supply and Treatment, Supervision, Surveys, Reports.
Daniel Field Airport,
Augusta, Ga.

E. J. Albrecht Company

Engineers—Contractors

Steel, chemical and power plants, Dams, flood control projects, railroads, Bridges, tunnels, heavy excavation.

2626 West 26th Street, Chicago 8

Alvord, Burdick & Howson

Charles B. Burdick
Louis B. Howson Donald H. Maxwell

Consulting Engineers

Water Works	Sewerage
Water Purification	Sewage Treatment
Flood Relief	Power Generation
Drainage	Appraisals

Room 1401
20 North Wacker Drive, Chicago

Consoer, Townsend & Associates

Water Supply—Sewerage—Flood Control & Drainage — Bridges — Express Highways—Paving—Power Plants, Appraisals — Reports — Traffic Studies—Airports
351 East Ohio St., Chicago 11, Illinois

De Leuw, Cather & Company

CONSULTING ENGINEERS

Transportation, Public Transit and Traffic Problems

Industrial Plants	Grade Separations
Railroads	Expressways
Subways	Tunnels
Power Plants	Municipal Works

150 North Wacker Drive
Chicago 6, Ill.

79 McAllister Street
San Francisco 2, Calif.

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Harza Engineering Co.

Consulting Engineers

J. F. Harza
E. Montford Fucik Calvin V. Davis
Hydro-Electric Power Projects
Transmission Lines, System Management, Dams, Foundations, Harbor Structures, Soil Mechanics
400 W. Madison St., Chicago 6, Ill.

Hazelet & Erdal

Consulting Engineers

Fixed and Movable Bridges	Designs
	Supervision
Superhighways	Investigations
Industrial Bldgs.	Reports
Airports Dams	Surveys

Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Heyburn Bldg., Louisville 2, Ky.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam — Hydraulic — Gas
Public Utilities - - Industrials
231 So. La Salle St. Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Interstate Engineering

Consulting Engineers

Design and Supervision of Municipal Improvements
Water Works, Sewage, Drainage, Surveys
Foundation Borings
Rock Island, Illinois

Jenkins, Merchant & Nankivil *Consulting Engineers*

Water Systems, Power Development, Flood Control, Airports, Traffic Surveys, Municipal Improvements, Sewerage, Industrial Plants, Recreational Facilities, Investigations and Reports.
805 East Miller St., Springfield, Ill.

Moore & Owen

Water, Sewage, Incineration Refuse Disposal, Airfields.
Complete Water & Sewage Laboratories—Industrial Wastes.
1456 N. Delaware St., Indianapolis 2, Ind.

Boyd E. Phelps, Inc.

Engineers

Water Supply and Purification
Sewage and Industrial Waste Treatment
Power Generation, Airfields, Reports, Investigations, Appraisals.
622½ Franklin St., Michigan City, Ind.

Chas. W. Cole & Son

Sewerage, SewageTreatment, Industrial Wastes, Water Supply, Water Treatment, Airports, Industrial Buildings.
Chas. W. Cole, Sr. Chas. W. Cole, Jr.
Ralph J. Bushee, M. J. McErlain
Wilber H. Gartner
220 W. LaSalle, South Bend, Ind.

Stanley Engineering Company, *Consulting Engineers*

Airports - Drainage - Electric Power
Flood Control - Industrial - Rate Studies - Sewerage - Valuations - Water Works
Hershey Building, Muscatine, Ia.

G. Douglas Andrews Associates

Engineering Consultants

General Engineering
and Consulting Services
Valuations and Management
212 Washington Avenue
Towson, Baltimore 4
Maryland

Saxe, Williar & Robertson

ENGINEERS • CONSULTANTS

Industrial Buildings
Bridges - Structures - Foundations
Highway & Regional Planning
Harbor Works • Port Development
Reports • Investigations

120 West Hamilton St.,
Baltimore 1, Maryland

Whitman, Requardt and Associates

Engineers — Consultants

Civil — Sanitary — Structural
Mechanical — Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul Street
Baltimore 2, Maryland

Maddox & Hopkins Inc.

Civil Engineering Consultants

Sewer & Water Design—Highway Design—Land Planning—Topographic Maps—City, Plane, Geodetic & Aerial Surveys — Plans — Specifications — Reports

8511 Colesville Rd., Silver Spring, Md.
Phone Washington, D. C., SL igo 4600

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants
Electrical Steam and Hydraulic Engineering
Investigations, Reports and Appraisals
Chamber of Commerce Bldg.
80 Federal St., Boston, Mass.

Metcalf & Eddy

ENGINEERS

Investigations Reports Design
Supervision of Construction and Operation
Management Valuation Laboratory
Statler Building, Boston

Philip B. Streander and Affiliates

Consulting Sanitary Engineers

Water Supply, Treatment, Distribution
Sewage, Sewage Treatment
Plans, Supervision, Reports
120 Tremont Street, Boston 8, Mass.

William J. Wenzel

Consulting Engineer

Great Falls, Montana

Developing the Great Northwest

Burns & McDonnell Engineering Company

Consulting Engineers 50th Year
Water Works, Light and Power, Sewerage, Reports, Designs, Appraisals Rate Investigations,
Box 7088 Country Club P. O.
95th & Troost, Kansas City, 2, Mo.

Black & Veatch

Consulting Engineers

Water - Sewage - Electricity - Industry

Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.

4706 Broadway, Kansas City 2, Mo.

Harrington & Cortelyou

Consulting Engineers

Frank M. Cortelyou
E. M. Newman F. M. Cortelyou, Jr.
Movable and Fixed Bridges of All Types, Foundations, and Related Structures.
1004 Baltimore Kansas City 6, Mo.

Russell & Axon

Consulting Engineers

Geo. S. Russell F. E. Wenger
Jos. Williamson, Jr.
Water Works, Sewerage, Sewage Disposal, Industrial and Power Plants, Appraisals.
408 Olive Street Municipal Airport
St. Louis 2, Mo. Daytona Beach, Fla.

Sverdrup & Parcel

Consulting Engineers

Bridges, Structures and Reports, Industrial and Power Plant Engineering.
Syndicate Trust Bldg., St. Louis 1 Mo.

Benjamin L. Smith & Associates

Engineers

Investigations—Reports
Designs—Supervision—Valuations
Municipal Engineering and Public Utilities
11 North Pearl St. Albany 7, N. Y.

F. D. Cooper

Consulting Engineer

Foundations
Design
Investigation

321 Lansdowne Road
DeWitt, New York

E. Lee Heidenreich, Jr.

Consulting Engineer

Quarries	Plant Layout
Crushing Plants	Storage
Milling Plants	Methods
Concrete Products Plants	Design Appraisals

67 Second St. Newburgh, New York

Andrews & Clark

CONSULTING ENGINEERS

DESIGN—CONSTRUCTION
SUPERVISION—REPORTS

305 East 63rd Street
New York 21, N. Y.

Barker & Wheeler

Water Supply	Utility and Industrial
Sewerage	Valuations
Sewage Disposal	Reports
Power Systems	

New York City, 11 Park Place
Albany, N. Y. 36 State St.

Clinton L. Bogert Associates

Consulting Engineers

Water and Sewage Works

Refuse Disposal	Industrial Wastes
Drainage	Flood Control

624 Madison Ave., New York 22, N. Y.

Economy

The service of the Consultant can usually be an economy in coping with your most intricate problems.

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding and following pages

Bowe, Albertson & Associates

Engineers

Sewerage—Sewage Treatment
Water Supply—Purification
Refuse Disposal—Analyses
Valuations—Reports—Designs
110 William St., 2082 Kings Hgway.
New York 7, N. Y. Fairfield, Conn

Buck, Seifert & Jost

Consulting Engineers

(Formerly Nicholas S. Hill Associates)

Water Supply — Sewage — Hydraulic Developments, Reports and Valuations. Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

Christiani & Nielsen

ENGINEERS

Harbor works - Bridges - Foundations - Industrial Buildings - Power Plants - Dams - Tunnels - Highways - Railroads

250 Fifth Ave., New York 1, N. Y.
Buenos Aires Rio de Janeiro Lima Montevideo
Caracas Mexico Bogota
Paris London The Hague
Stockholm Oslo Copenhagen
Cape Town Bangkok

L. Coff

Consulting Engineer

Prestressed Concrete
Bridges and Frames
198 Broadway New York 7, N. Y.

Hugh L. Cooper & Co.

Incorporated

General Hydraulic Engineering

Including the design, financing, construction and management of hydro-electric power plants.

350 Fifth Ave., New York 1, N.Y.

Ebasco Services Incorporated

Engineers - Constructors
Business Consultants
Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering

Two Rector Street New York

Fay, Spofford & Thorndike

Engineers

Charles M. Spofford Ralph W. Horne
John Ayer William L. Hyland
Bion A. Bowman Frank L. Lincoln
Carroll A. Farwell Howard J. Williams

Bridges and Industrial Plants
Water Supply and Sewerage Works
Port and Terminal Works Airports

Valuations, Investigations, Designs, Supervision of Construction.

11 Beacon St., Boston, Mass.
420 Lexington Ave., N. Y.
(Graybar Bldg.)

Fraser-Brace Engineering Co., Inc.

DESIGN - CONSTRUCTION - REPORTS - APPRAISALS
COMPLETE MANAGEMENT OF PROJECTS

10 East 40th St.,
New York 16, N. Y.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers

Bridges and Structures

New York, N. Y., 55 Liberty St.
Kansas City, Mo., 921 Walnut St.

Hardesty & Hanover

Consulting Engineers

Successors to Waddell & Hardesty

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris

FREDERIC R. HARRIS, INC.

ENGINEERS

DESIGNS MANAGEMENT
REPORTS APPRAISALS

Harbor & Waterfront Work, Floating Drydocks, Port Development, Hydro-Electric Development, Flood Control, Water Supply, Sanitary & Industrial Waste Disposal.

New York 27 William Street
Philadelphia Fidelity-Phila. Bldg.
San Francisco Ferry Bldg.
Vera Cruz, Mexico

Lockwood, Kessler & Bartlett, Inc.

ENGINEERS — SURVEYORS

General Engineering Services
Aerial and Ground Surveys
Photogrammetric Mapping
Domestic and Foreign

32 Court St. Brooklyn 2, N. Y.

Knappen Tippetts Abbett Engineering Co.

Ports, Harbors, Flood Control, Power, Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic, Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

Modjeski and Masters

Consulting Engineers

Design, Supervision, Reports, Inspection and Investigations, of Bridges, Structures, and Foundations.
535 Fifth Ave., State Street Bldg.
New York, N. Y. Harrisburg, Penna.

Moran, Proctor, Freeman & Mueser

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

New York 17, N.Y., 420 Lexington Ave.

PARDO, PROCTOR, FREEMAN & MUESER
Ap. Corrfos 614 Caracas, Venezuela.

Parsons, Brinckerhoff, Hall & Macdonald

ENGINEERS

Airports, Bridges, Tunnels, Highways, Traffic and Transportation Reports, Subways, Foundations, Harbor Works, Valuations, Power Developments, Industrial Buildings, Dams, Sewerage, Water Supply.

51 Broadway, New York 6, N. Y.

Malcolm Pirnie Engineers

Civil & Sanitary Engineers

Malcolm Pirnie Ernest W. Whitlock
Richard Hazen G. G. Werner, Jr.

Investigations, Reports, Plans, Supervision of Construction and Operations. Appraisals and Rates

25 W. 43rd St., New York 18, N. Y.

The Pitometer Company

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Penstock Gaugings

New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Wastes, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts

Weston Garett-Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals
30 Church Street, New York 7

Sanderson & Porter

Engineers and Constructors

New York Chicago
San Francisco Los Angeles

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye, Stevenson & Value

Consulting Engineers

Successors to
Elwyn E. Seelye & Company
101 Park Avenue
New York 17, N. Y.

Airports, Highways, Dams, Concrete, Steel, Welding, Foundations, Stadia, Appraisals & Industrial Plants.

Elwyn E. Seelye, Albert L. Stevenson
Burnside R. Value
L. C. Hammond, H. S. Woodward, Austin M. Rice, C. H. Hamilton, V. J. Pacello, C. M. Throop, R. Sahlberg, W. D. Bailey, J. U. Wiesendanger, P. King.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7
1400 South Penn Square, Philadelphia

Havana, Cuba Lima, Peru
Bogota, Colombia, Caracas, Venezuela,
San Juan, Puerto Rico, Guayaquil, Ecuador

D. B. Steinman

Consulting Engineer

Bridges
Design, Construction, Strengthening, Investigations, Reports, Advisory Service.

117 Liberty St., New York 6, N.Y.

Sy-Co Engineers

G. A. Syversen, G. Randolph Syversen
H. Syversen—Consultants
Industrial Plants, Commercial Buildings, Power Plants, Materials Handling Systems
Estimates—Reports—Design Supervision
39 Broadway New York 6, N. Y.

Taylor, Henry W.

Water Supply, Sewerage
Garbage Disposal, Incineration
Industrial Wastes Disposal
Hydraulic Developments

11 Park Place, New York City

The J. G. White Engineering Corporation

Design—Construction
Reports—Appraisals

80 Broad Street, New York 4

James M. Caird

Established 1898

C. E. Clifton, H. A. Bennett
Chemists and Bacteriologist
WATER ANALYSIS
Tests of Filter Plants
Cannon Building, Troy, N. Y.

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings

Troy, N. Y. Ft. Lauderdale, Fla.

The F. A. Schneider Co.

Consulting Engineers

Commercial Buildings, Process Plants, Layouts & Design.

Box 310, Bucyrus, Ohio

The Austin Company

Design and Construction

Manufacturing and Process Plants
Airports & Air Transport Buildings
Railroad Terminals and Facilities
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Reports and Plant Location Surveys

New York CLEVELAND Los Angeles
Chicago Houston Oakland
Detroit Seattle

Havens and Emerson

W. L. Havens C. A. Emerson
A. A. Burger F. C. Tolles F. W. Jones
CONSULTING ENGINEERS
Water, Sewage, Garbage, Industrial Wastes, Valuations—Laboratories

Leader Bldg. Woolworth Bldg.
Cleveland 14 New York 7

Jones, Henry & Schoonmaker

(formerly Jones & Henry)

Consulting Sanitary Engineers

Water Works, Sewerage & Treatment
Waste Disposal
Security Building Toledo 4, Ohio

Benham Engineering Co.

ENGINEERS

Webster L. Benham
M. Am. Soc. C. E.
Water Supply & Purification, Sewerage, Sewage Disposal, Electric Light & Power, Roads, Drainage
Am. National Bldg., Oklahoma City, Okla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges Dams
Planning Airports
Sewage Systems Water Works
Design and Surveys Roads & Streets
Executive Offices Dillsburg, Penna.

Brookhart & Tyo, Inc.

Engineers

Highways
Industrial Buildings
Bridges and Structures
Design, Estimates, Reports
6th & Maclay Sts. Harrisburg, Pa

PROFESSIONAL SERVICES

Cards arranged by states, cities, names

Additional cards on preceding pages

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Water Works, Sewage, Industrial Wastes & Garbage Disposal — Roads, Airports, Bridges & Flood Control, Town Planning, Appraisals, Investigations & Reports.

Scranton Pa. Pittsburgh, Pa.
Harrisburg, Pa. New York, N. Y.

Albright & Friel, Inc.

Consulting Engineers

Water, Sewage and Industrial Waste Problems, Airfields, Refuse Incinerators, Power Plants, Industrial Buildings, City Planning. Reports, Valuations, Laboratory.

121 So. Broad St., Philadelphia 7, Pa.

Day & Zimmermann, Inc.

Engineers

Designs, Construction, Valuations Reports and Management
Public Utilities and Industrials
Philadelphia
New York Packard Building Chicago

Fridy - Gauker - Truscott & Fridy

Architects & Engineers

Water . Sewerage . Industrial Waste Incineration . Power & Distribution Airport . Building . Town Planning
1321 Arch Street . Philadelphia 7, Pa.

William A. Goff, Inc.

General Engineering and Consulting Services

Water, Sewerage, Refuse Incineration, Industrial Buildings, Power Plants, Airports, Town Planning, Plans, Supervision, Valuations, Reports.
Broad St. Station Bldg., Phila. 3, Pa.

Sanders & Thomas, Inc.

Structural & Mechanical Engineers

1352 W. Girard Avenue,
Philadelphia 23, Pa.

Security Trust Building, Pottstown, Pa.

Hunting, Larsen & Dunnells

Engineers

Industrial Plants—Structures
Bridges—Steel and Reinforced Concrete
Design and Supervision—Reports
1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles, Inc.

Engineers

Water Supply and Purification, Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.
Pittsburgh, Pa.

Gilbert Associates, Inc.

Engineers and Consultants

Design and Supervision of Steam, Hydro, Water Supply, Sewage Disposal, Diesel Plants and Airports, Valuations, Laboratory
Reading, Pa. 412 Washington St.
New York 61 Broadway
Houston Oil & Gas Building
Washington, D. C. 1417 K St., N. W.

Michael Baker, Jr., Inc.

THE BAKER ENGINEERS
CIVIL ENGINEERS, PLANNERS, AND SURVEYORS.
MUNICIPAL ENGINEERS
Airport Design—Sewage Disposal Systems—Water Works Design and Operation—Cons. Sur.—Surveys & Maps.
Rochester, Pa. Jackson, Miss.

Lacy, Atherton, Wilson & Davis

Architects and Engineers

Hotel Sterling Building,
Wilkes-Barre, Pa.

Frank A. Busse

Consulting Engineer

Industrial Buildings, Viaducts, Bridges, Foundations, Harbor Works, River Barge Terminals, City Planning, Airports, Sewage Treatment.
669 Shrine Building, Memphis 3, Tenn.

Myers & Noyes & Associates

Consulting Engineers

Water Supply, Sewage, Flood Control, Shore Protection, Irrigation and Reclamation, Reports and Valuations
2204 Tower Petroleum Bldg., Dallas, Texas
320 Wilson Building
Corpus Christi, Texas

Lockwood & Andrews

Consulting Engineers

Airports, Paving, Industrial Plants, Drainage & Sewerage, Site Locations, Soils & Foundations, Water Supply, Structures, Harbor Works, Valuations, Reports — Design — Supervision
Union Nat'l Bank Bldg., Houston, Tex.

Hutchings & Milani

Architects, Engineers & Constructors

Louis C. Milani
Nicholas J. Senesey, A.I.A.
Clark W. Abbott, R.I.B.A.
Patricia Stewart Coller, B.A.

Design-Consultants-Constructors

Specializing in Industrial, Hotel & Resort Developments throughout the West Indies.

HAMILTON, BERMUDA.

Inspecting and Testing

Robert W. Hunt Co.

Inspecting and Testing Engineers

Inspection and Tests of Materials
Supervision of Construction for Utility Plants, Buildings, Bridges, Machinery and Equipment

General Offices and Laboratories
175 West Jackson Boulevard, Chicago
New York — Pittsburgh — St. Louis

The Gulick-Henderson Laboratories, Inc.

Inspecting & Testing Engineers

524 Fourth Ave., Pittsburgh 19, Pa.
35 West 43rd St., New York 18, N. Y.
431 South Dearborn St., Chicago 5, Ill.

Technical Translations

Sales & Engineering Service Co.

Technical Translation Service By Engineers

Plans, Specifications, Contracts
Prompt accurate
24 Stone St. New York 4, N. Y.

Consult these Specialists:

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

OFFICIAL PROPOSALS

(Continued from page 87)

Bids: October 25, 1949 (364)

Sewerage System & Subaqueous Outfall Sewer

VILLAGE OF CROTON-ON-HUDSON NEW YORK

NOTICE TO CONTRACTORS

Sealed Proposals for the Construction of a Sewage Works will be received by the Mayor and Board of Trustees at their office in the Municipal Building, Van Wyck Street, Croton-on-Hudson, New York, until 8:00 P. M. Eastern Standard Time, on October 25, 1949, after which time they will be publicly opened and read. No bids will be accepted after said hour. Proposals will be received on the following contracts:

Contract I—Sewerage System
Contract III—Subaqueous Outfall Sewer

Information for Bidders, Form of Proposal, Form of Contract, Plans and Specifications, may be examined at the offices of Bowe, Albertson & Associates, Engineers, 110 William Street, New York City, New York and at the office of the Village Clerk, Municipal Building, Croton-on-Hudson, New York, between the hours of 10 A. M. and 4 P. M. daily except Saturdays, Sundays and holidays.

Copies of the plans and specifications may be obtained from either the offices of the Engineers or the Village Clerk upon making a deposit of fifteen ($15.00) dollars, which amount will be refunded to the bidder who applies for a refund within thirty (30) days after the date when the bids are opened, and who returns the plans and specifications undamaged.

Cash, or a certified check made payable to the order of the Village of Croton-on-Hudson, New York, in the amount of 5% of each contract bid must be deposited by each bidder with his bid as a guarantee that, in case the contract is awarded to him, he will, within ten days thereafter, execute such contract and furnish a satisfactory Performance Bond and Labor and Material Bond. Acceptance of the bid will be contingent upon fulfillment of this requirement by the bidder and on failure to do so, he shall forfeit the deposit.

OFFICIAL PROPOSALS

The successful bidder on each contract will be required to furnish a Performance Bond and Labor and Material Bond in statutory form and with sureties authorized to do business in the State of New York, which bonds shall be in the amount of the contract.

The Village of Croton-on-Hudson reserves the right to reject any or all bids, to waive any informalities to accept the bid or bids which in its judgment will be for the best interests of the Village of Cronton-on-Hudson.

VILLAGE OF CROTON-ON-HUDSON,
NEW YORK
By: Albert Rozell,
Mayor

Dated, September 13, 1949

Bids: October 11, 1949 (361)

Gasoline-Engine Generator Sets

CONTRACT 409

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Standard Time, on Tuesday, October 11, 1949, for Contract 409, for furnishing, testing and delivering three gasoline-engine generator sets for the Rondout effluent chamber and the Neversink and East Delaware intake chambers of the Delaware aqueduct, all as set forth in the specifications.

No bid will be received and deposited unless accompanied by a certified check upon a National or State bank, drawn and made payable to the order of the Comptroller of the City of New York, in the amount of one thousand dollars ($1,000.00), for the proper execution of the contract.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., can be obtained at the office of the Chief Engineer, Room 1311, at the above address, upon application in person or by mail, by depositing the sum of five dollars ($5.00) in cash or its equivalent for each pamphlet. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of four

OFFICIAL PROPOSALS

dollars ($4.00) will be made for each other pamphlet returned in acceptable condition. For further particulars, apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, HENRY HESTERBERG, RUFUS E. McGAHEN, Commissioners, Board of Water Supply; RICHARD H. BURKE, Secretary.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2792) will be received by Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado, October 20, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Brush-Limon, 115-kilovolt, three-phase, wood-pole, H-frame-type transmission line, approximately 70 miles long, with two overhead ground wires, Colorado-Big Thompson Project, Colorado. The work is situated between Brush, Colorado and Limon, Colorado. Time allowed for completion will be 320 days. For particulars, address Bureau of Reclamation, Building 10 or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (368)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. 2786) will be received by Bureau of Reclamation, Denver, Colorado, October 18, 1949, and then publicly opened for furnishing labor and materials and performing all work for the construction of the Yuma-Wray, 69-kilovolt transmission line, Colorado-Big Thompson Project, Colorado. The work is situated between Yuma and Wray, Colorado. The line is approximately 28 miles long, and of 3-phase, single-circuit, wood-pole 69-kilovolt construction, except that the pole spacing and crossarm dimensions are for 115 kilovolts. Time allowed for completion will be 240 days. For particulars, address Bureau of Reclamation, Building 1-A or Building 10, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (369)

NEW PRODUCTS

Grid Roller Compacts Soil; Salvages Bituminous Material

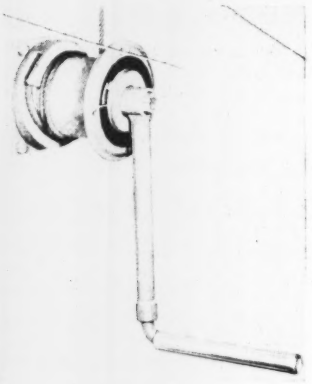
Grid roller consists of two 5-foot-diameter wheels attached to frame for towing behind tractor or motor grader. Each wheel is 32 inches in width and is made of ten replaceable sections of heat-treated alloy-steel grid segments bolted onto circular side plates. Grid is formed by interlacing 1½-inch round bars. Openings between adjacent bars are 3½ inches square. Design of grid surface, with closely spaced high-pressure points surrounded by confined low-pressure areas, results in high degree of compaction with minimum lateral shifting of material. Grid roller can also be used for salvaging and maintaining bituminous pavements—after scarifying, it breaks up and partially pulverizes road mixes, compacts the sub-grade after old pavement has been windrowed to the side, and then compacts the fill of replaced broken-up black-top preparatory to final surfacing. Cleaners with cast teeth are provided for use in clay or loam soils. A counterweight box permits adjustment of weight to suit soil and tractor requirements. The box, weighing 3,500 pounds, will hold 16,500 pounds of wet sand. The grid roller can be used at high speeds.—Hyster Co., 2953 N. E. Clackamus, Portland 8, Ore.

Driver for Fence Posts

Power-driven fence-post driver can be mounted on truck, Jeep, or small trailer. Hammer weighs 100 pounds and provides a free drop of 80 inches. It can be used to drive posts up to 8-feet long with only a few blows. And, in the case of snow fence posts, it can be used even after frost has set in. —Henrici Laundry Machinery Co., Henrici St., Mattapan Station, Boston 26, Mass.

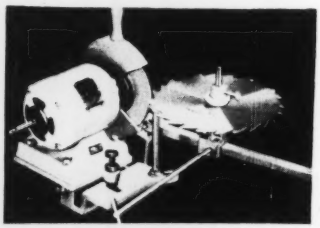
Silent-Chain Flexible Couplings

Improved line of silent-chain flexible couplings combines maximum power transmission capacity with minimum space requirements. The Series DSC consists of two sprockets wrapped with a center-guide Morse silent chain, and is easily disconnected by one of two methods—by unwrapping the chain after removing the single connecting pin, or by moving either sprocket end wise out of mesh with the chain. Stock bores range from ½ to 2⅞ inches, with horsepower capacities up to 119 hp. at 2,000 rpm. Two covers are available—stamped steel for economy, or plastic for maximum protection.—Morse Chain Co., 7601 Central Ave., Detroit 8, Mich.



General-Purpose Winch

Planetary-gear-type winch can be mounted in any position on a flat 5 x 5¾-inch flat surface. The winch drum has a 4-inch diameter; the flanges, a 6-inch diameter. Direct cable pull is 600 pounds, and each revolution of the crank winds up 3 inches of cable. A positive-acting brake holds the load securely in position and prevents spinning of the handle when crank is being turned in reverse direction for lowering the load. The drum holds 25 feet of ¼-inch cable.—Lewis-Shepard Products, Inc., 268 Walnut St., Watertown 72, Mass.



Saw-Gumming Machine

Powered saw-gumming machine is recommended for precision jointing, gumming, tooth forming, and sharpening of rip and cut-off circular saws. The Belsaw handles all types of circular saws from 8 to 48 inches in diameter having ½ to 2-inch center holes. The Belsaw is powered by a ¼-hp 110-volt 60-cycle motor. It weighs 77 pounds and is easily bolted to the edge of a work bench.—Belsaw Machinery Co., 315 Westport Road, Kansas City 2, Mo.

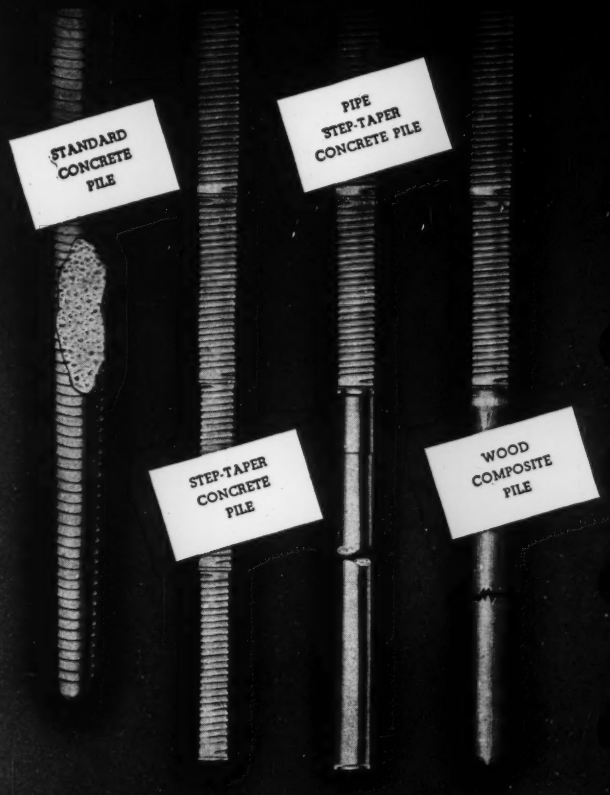
Scoop Has Fluid Drive

Materials-handling Model C Wagnermobile scoop is equipped with Chrysler fluid drive. It is recom-

(Continued on page 104)

OUTSTANDING ADVANTAGES
OF
RAYMOND CONCRETE PILES

Raymond's successful experience for more than a half century has thoroughly proved these six outstanding advantages of Raymond Concrete Piles. These benefits, plus Raymond's expert personnel and specialized equipment, result in sound, dependable substructures that meet every requirement. You are invited to consult our engineers for the facts.



1

2

3

4

5

6

RAYMOND CONCRETE PILE CO.

Branch Offices in Principal Cities of United States and Latin America

140 CEDAR STREET · NEW YORK 6, N. Y.

AROUND THE WORLD
52 YEARS FOUNDED 1897 OF PROGRESS

THE SCOPE OF RAYMOND'S ACTIVITIES

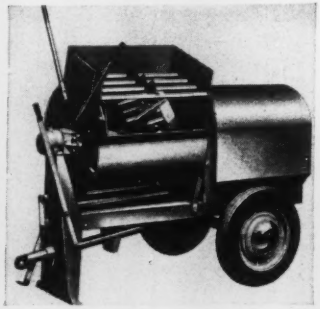
Includes every recognized type of pile foundation—concrete, composite, precast, steel, pipe and wood. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements and borings for soil investigation.

When you need specific information on materials, equipment or services, reach for your Sweet's File, Engineering (the big blue file). It contains 330 manufacturers' catalogs full of useful information on thousands of products . . . from absorbers—gas, to zinc galvanizing. Cross indexing speeds finding.

If Sweet's File, Engineering, is not available in your office, make request immediately for application form. Files are distributed FREE to qualified organizations and individuals.

Sweet's
CATALOG SERVICE
for easier, faster selection of products
119 W. 40th ST., NEW YORK 18, N. Y.

mended as a lightweight portable loader for yard work and general materials handling. The Model C is available in five sizes with load-lifting capacity of 4,000 pounds. Hydraulic controls fold down top section of the hoist track giving an overall height of 98½ inches. Track reaches 26 feet with standard extensions. Attachments include ¾-cubic-yard concrete hopper, crane lift boom, and lift forks. —MIXERMOBILE MANUFACTURERS, 6855 N. E. HALSEY ST., PORTLAND 16, ORE.



Plaster and Mortar Mixer

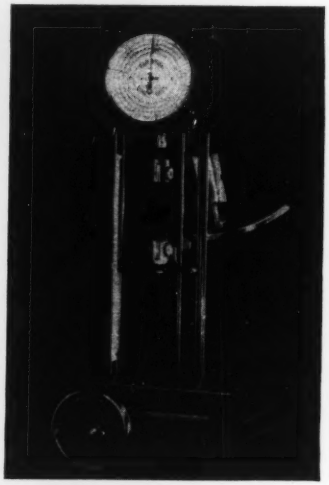
Improved Power Hoe plaster and mortar mixer has a 6-cubic-foot capacity and will handle up to 40 shovels of sand. Of the tilt-type, the mixing drum and 6.4-hp gasoline engine are entirely separate. In addition to exact hand-lever control of discharge at any point in the drum's arc, two fixed positions are offered—24 inches for wheelbarrows and 17½ inches for mortar boxes. Four sets of mixing blades, with four blades per set, provide uniform distribution of binder material. With axles telescoped and hub caps removed, the mixer will pass through 33-inch doorways.—THE JAEGER MACHINE CO., 550 W. SPRING ST., COLUMBUS 16, OHIO.

Hard-Facing Electrode

Hard-facing electrode is especially designed for service consisting of extreme abrasion and mild impact. Easy to apply on carbon or manganese-steel parts, it is available in 14-inch lengths in ⅛, 5/32, and ¼-inch diameters. These rods have a deposited Rockwell C hardness of 61 to 65, and will not anneal under heat. Recommended applications include clamshell bucket lips, conveyor screws, pug mill shoes, scraper blades, drag links, cement-tube liner plates, dredging cutters, and concrete-mixer arms.—WALL COLMONOY CORP., 19345 JOHN R ST., DETROIT 3, MICH.

All-Metal Sash Balance

All-metal sash balance and weatherstrip unit eliminates pulleys, cords, box frames, and weights. The sash is counterbalanced in two ways; by coil-spring tension which overcomes gravity, and by metal-housing tension which provides a stable sash in any position. In raising and lowering the sash, the spring housing compresses against the groove for stability, but does not hinder free vertical movement. The coil spring is concealed in a flexible tubular metal housing designed for installation in a ⅜x⅜-inch sash-stile groove. The unit automatically adjusts to any amount of contraction or expansion in the wood. Double contact prevents rattle when windows are open. Can be used on all double-hung windows, old or new.—ALLMETAL WEATHERSTRIP CO., 2241 N. KNOX AVE., CHICAGO 30, ILL.



Low-Range Testing Equipment

Hand-operated low-range universal testing machine has a 100-pound capacity. It will handle specimens in tensile, compressive, transverse, and shear tests. Several types of grips are available for special tests and materials. Indicator is designed to remain at peak load after specimen breaks. The unit is 40 inches tall, weighs 85 pounds, and is hand-operated through a worm-and-gear drive.—W. C. DILLON AND CO., INC., 5410 W. HARRISON ST., CHICAGO 44, ILL.

Supercharged Diesel Engine

Improved high-speed supercharged diesel develops 300 hp at 2,100 rpm. Model NHRS features reduced fuel consumption, new fuel pump which is 56 percent smaller and 65 percent lighter than previous models, fully counter-balanced crankshaft, improved piston design, and improved tubular-type lubricating-oil cooler.—CUMMINS ENGINE CO., INC., COLUMBUS, IND.

PROOF - *not Guesswork*

Makes FWD America's Foremost Heavy-Duty Truck

Here's actual operating proof in typical road construction service — an everyday job for this FWD operated by a county highway department. Going such as this demands trucks that can do the job. It demands trucks you can rely on every day. It demands FWDs. Yes — you can be sure with FWD even before you buy. Here's why. FWDs are scientifically tested on FWD's proving ground to twist over irregular ditches — 18 inches deep. *No wonder FWD trucks are the number one choice of states, counties, and municipalities — with individual fleets of over 300 units!*

WHAT FWDs DO ON THE PROVING GROUND
1 Highball over hilly curved roads!
2 Slog thru mud — up to the bumper!
3 Speed over 100-ft. unbanked circle!
4 Twist over ditches — 18 inches deep!
5 Drive up 6% grade thru 3-ft. of sand!
6 Climb 70% grade from dead stop!
7 Climb 8-in. beam from standstill!
8 Drill pole holes to prove equipment!
9 Speed safely over level highways!
1
2
3
5
6
7
8
9

This is FWD's proving ground. This is your assurance that the FWD you select has the stamina to insure long life without expensive mechanical breakdowns.

An FWD twists over 18-inch ditches on the proving ground. For all the facts, see your FWD distributor—or write FWD direct.

An Invitation To Truck Buyers

We invite you to watch FWDs pass a series of rigid performance tests. Ask your FWD distributor to arrange your visit to our plant. Or — if you can't get away, ask him to show you the movie, *The FWD Story*. In either case, you will see for yourself how FWD trucks can help solve your heavy-duty trucking problems.

Matt A. Olson
President
The Four Wheel Drive Auto Company

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wis. • *Canadian Factory:* Kitchener, Ontario
FOUR AND SIX WHEEL DRIVE TRUCKS

America's Foremost Heavy-Duty Truck

FOR YOUR CONSTRUCTION NEEDS

Bethlehem machine, carriage and lag bolts are manufactured in such a wide range of types and sizes that they meet virtually every construction need. They come plain or galvanized, and are now in good supply.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

★ BETHLEHEM STEEL ★

MACHINE CARRIAGE AND LAG BOLTS ARE PRODUCTS OF BETHLEHEM'S LEBANON, PA., PLANT

Other
Bethlehem Construction Fastenings

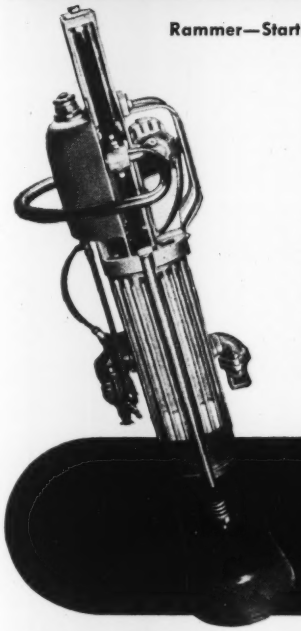
TIE-RODS • SPIKES • RIVETS • TURNBUCKLES • CLEVISES
SLEEVE NUTS • STANDARD AND SPECIAL BOLTS

EASY, INEXPENSIVE SOIL COMPACTION

The New BARCO RAMMER

Rammer—Starting

Rammer—Jumping

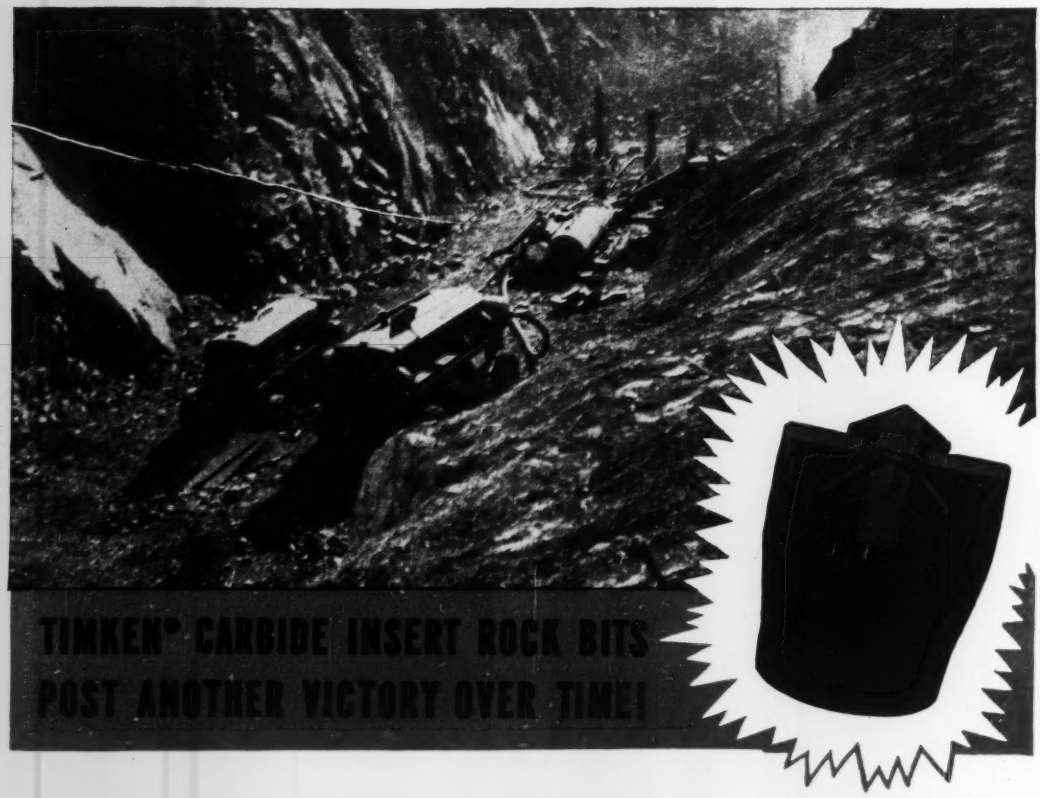


The new Barco Rammer is faster and more effective than any other type of tamper. It is easier on the worker, enables him to get more work done in less time, and at *lower cost.* Although rollers may do the compaction on large projects, they cannot reach locations close to abutments, culverts, walls and so on. But the new Barco Rammer remedies this situation, gives specified compaction. On large backfill tamping where a ditcher is used, the Barco Rammer works quickly and effectively. Today, with Federal, State and City authorities, as well as private corporations devoting more and more attention to these problems, the best answer is the Barco Rammer —the *entirely new* machine with the *entirely new method* of securing soil compaction. For more information write Barco Manufacturing Company, 1814 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.

BARCO

GASOLINE RAMMER

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY



TIMKEN® CARBIDE INSERT ROCK BITS POST ANOTHER VICTORY OVER TIME!

Time was short — the rock was hard when Porter-De Witt Construction Company, Poplar Bluff, Mo., started work on the Missouri Pacific Railroad's relocation job near Gads Hill.

A cut 1,000 feet long, 55 feet deep and 34 feet wide, involving the excavation of 55,000 yards had to be made through some of the hardest porphyry rock in the state of Missouri.

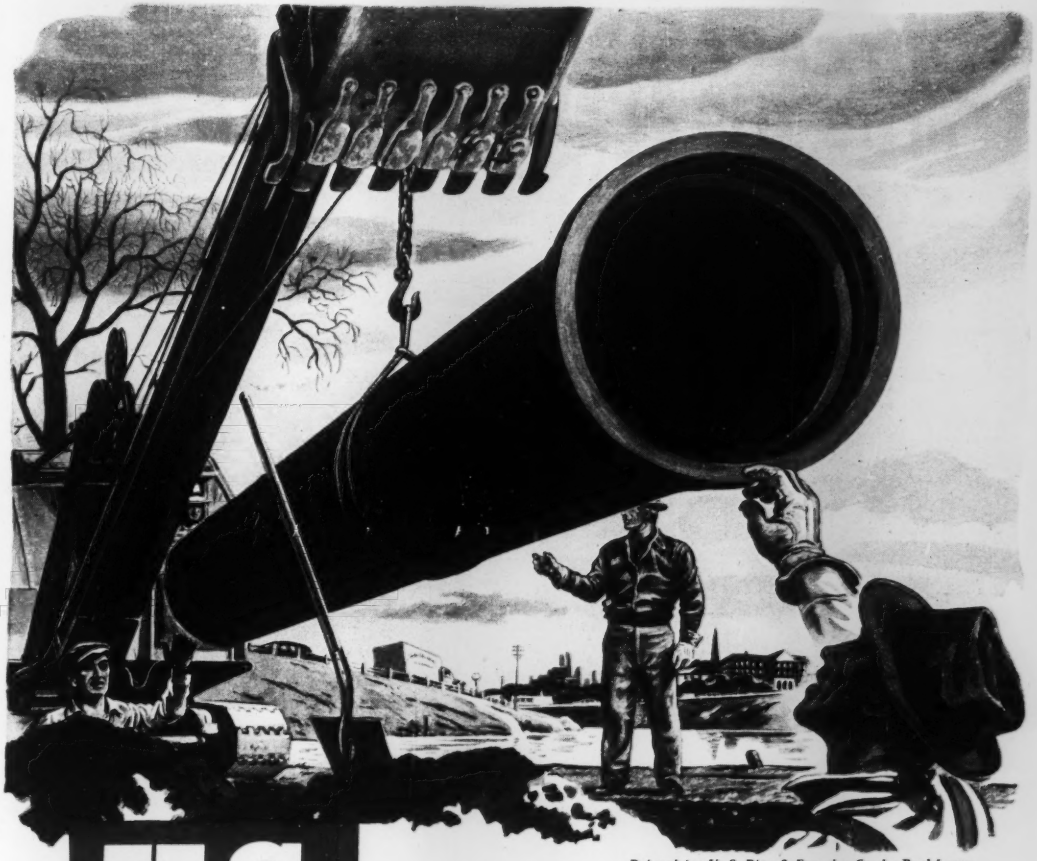
Faced with this problem, the contractor selected Timken carbide insert rock bits for the job. Result, work completed on time; costs kept in line with the contract.

The contractor has expressed his complete satisfaction with the performance and economy of Timken carbide insert bits on this project.

You have the rock; we have the bit, know-how and experience to beat it—save time, cut cost.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
ROCK BITS

THE TIMKEN ROLLER BEARING COMPANY
CANTON 6, OHIO
Cable Address "TIMROSCO"



Painted for U. S. Pipe & Foundry Co. by Paul Laune

U.S. cast iron PIPE

AND INDUSTRIAL SERVICE

THE quality of U. S. Cast Iron Pipe is controlled to a degree undreamed of by pipe founders a generation ago. Before the molten metal is poured into the mold of a Super-deLavaud centrifugal casting machine the important characteristics of the iron have been determined by our metallurgists. After the pipe has been cast our plant and research laboratories conduct numerous tests, in addition to acceptance tests, to assure the maintenance of quality in U. S. Pipe. This routine procedure at our several plants is enforced so that *we* may be confident that *your* confidence in our product continues to be justified. **United States Pipe and Foundry Co., General Offices: Burlington, New Jersey, Plants and Sales Offices Throughout U. S. A.**

BIG CAPACITY PLUS THE SPEED OF STRAIGHT-LINE-LOADING

THE AUSTIN OVERSHOT LOADER

With one straight-in-line action, the single operator of the AUSTIN OVERSHOT LOADER dozes his load and swings it smoothly and quickly overhead into the waiting truck. Naturally the action is faster! No time-consuming swings...cleaner mucking...good, solid "bites."

This revolutionary loader attaches to any late model crawler type tractor. It is 100% MECHANICALLY OPERATED and ruggedly built to stand up to severe conditions. Horizontal mounting of main bucket arm lets you doze the load with full power of the tractor.

● Offered in three sizes: for 1½, 2½, and 3½ cu. yd. (rated capacity) buckets. Write for prices—surprisingly low—and full mechanical data. John Austin, Inc., P O. Box 807, Longmont, Colorado.

BIG BITES MEAN HIGH SPEED LOADING, typical of the Austin Overshot Loader, shown here working granite on Loveland Pass, Colorado, well over 11,500 feet above sea level. (4-yd. Dumpsters keep hillsiding by maximum one minute loading time).

FOR LONGER PROFITS investigate the Austin Overshot Loader...Today.

JOHN AUSTIN, INC.
LONGMONT, COLORADO

ADVERTISERS IN THIS ISSUE

Allied Structural Steel Companies 16
Atlas Powder Co 50
Austin, Inc., John 110
Autolene Lubricants Co 69

Barco Mfg. Co 107
Bay City Shovels 80
Belmont Iron Wks 70
Bethlehem Steel Co 106
Bruning Co., Inc., Charles 10
Brunson Instrument Co., Inc 76
Buffalo Products, Inc 55
Byers Co., A. M ..... 2nd Cover

Caterpillar Tractor Co 6, 7
Cement Gun Co 77
Chapman Valve Mfg. Co 53
Commercial Shearing & Stamping Co 74
Complete Machinery & Equip. Co 73

Dewey & Almy Chemical Co 2
Dravo Corp 83

Electric Tamper Equipment Co 62
Eppinger & Russell Co 111
Euclid Road Machinery Co 11

Faber-Castell Pencil Co., Inc., A.W 64
Fort Pitt Bridge Wks 5
Four Wheel Drive Auto Co 105

General Excavator Co 59
Goodyear Tire & Rubber Co 1
Gordon Smith & Co 68
Griffin Wellpoint Corp 78
Gunite Concrete & Construction Co 111
Gunite Construction Corp 83
Gunite Florida Service, Inc 59

Hendrick Mfg. Co 74
Hudson Rumsey Co., Inc 73
Inland Steel Co 18
International Harvester Co., Inc 47

Jaeger Machine Co 79
Joy Mfg. Co 13

Kinnear Mfg. Co 79

Lehigh Portland Cement Co 65
Lock Joint Pipe Co 12

MacArthur Concrete Pile Corp 77
Macomber, Inc 67
Master Builders Co ..... 3rd Cover
McGraw-Hill Book Co 78
McKiernan-Terry Corp 78
Moretrench Corp 82
Mott Core Drilling Co 70

Naylor Pipe Co 56
Northwest Engineering Co 3
Novo Engine Co 70

Ohio Locomotive Crane Co 111
Osgood Co 59
Owen Bucket Co 111

Pennsylvania Drilling Co 77
Plymouth Locomotive Wks 55
Portland Cement Assn 63
Pressure Concrete Co 80

Raymond Concrete Pile Co 103
Rockford Clutch Div., Borg Warner Corp 75
Rogers Bros. Corp 73
Ryerson & Son, Inc., Joseph T 76

Sauerman Bros 62
Schramm, Inc 4
Shotcrete Construction Co 78
Spencer, White & Prentis, Inc 83
Sprague & Henwood, Inc 83
Stang Corp., John W 69
Sweet's Catalog Service 54, 80, 104

Texas Company ..... 4th cover
Thew Shovel Co 15
Timber Structures, Inc 52
Timken Roller Bearing Co 108
Tinney Drilling Co 80
Torrington Co 58
Truscon Steel Co 14
Twin Disc Clutch Co 61

Underpinning & Foundation Co., Inc 75
U. S. Pipe & Foundry Co 109
U. S. Steel Corp. Subsidiaries 22
Universal Atlas Cement Co 22
Universal Sewer Pipe Corp 57

Vacuum Concrete, Inc 70
Viber Company 9
Vulcan Iron Wks 71

Wheeler Insulated Wire Co., Inc 46
Williams Co., J. H 77
Wood Co., R. D 20

Yoder Co 8

PROFESSIONAL SERVICES

99, 100, 101

SEARCHLIGHT SECTION
(Classified Advertising)

Employment
Positions Vacant 87, 88
Civil Service 87
Positions Wanted 88, 89
Selling Opportunities Wanted 89
Employment Services 89
Labor Bureaus 89
Educational
Schools 88
Tutoring 88
Business Opportunities
Offered 89
Notices
Proposal 85, 86, 87, 101
Property
For Sale 89
Equipment
(Used or Surplus New)
For Rent 90
For Sale 89-98
Piling 98
Pipe 98
Rail 98
Surveying Instruments 90
Wanted
Equipment 98

ADVERTISERS INDEX ..... Page 86

ENGINEERING NEWS-RECORD

G. R. Ramel, Sales Manager — Howard Olsen, Business Manager

Sales Representatives—Fred G. Hudson, L. H. Hunt and H. L. Keeler, 520 N. Michigan Ave., *Chicago* 11; Ralph Dorland, 68 Post Street, *San Francisco* 4; D. S. Robertson and W. G. Payne, 330 W. 42nd St., *New York* 18; A. B. Cozzens, 17th and Sansome Sts., *Philadelphia* 3; E. E. Duff, Jr., Hanna Bldg., *Cleveland* 15; B. F. Horn, Penobscot Bldg., *Detroit* 26; W. E. Donnell, Continental Bldg., *St. Louis* 8; C. F. McReynolds, 621 So. Hope St., *Los Angeles* 14; Ralph Maultsby, Rhodes-Haverty Bldg., *Atlanta* 3; J. H. Allen, First National Bank Bldg., *Dallas* 1. Other sales offices—738-39 Oliver Bldg., *Pittsburgh;* 1427 Statler Bldg., *Boston* 16; Aldwych House, *London*, England.

"GUNITE" CONCRETE
(Since 1915)

FOR • STEEL PLATE LINING • STEEL ENCASEMENT • BUILDING NEW WALLS • LINING WATER RESERVOIRS, TUNNELS AND SEWERS • PLATE LINING OF STEEL STACKS, BUNKERS, DUCTS • REPAIR OF DISINTEGRATED CONCRETE AND MASONRY • CANAL, DITCH AND DRAIN LINING

GUNITE CONCRETE & CONST. CO.
1301 Woodswether Rd., Kansas City 6, Mo.

District Branch Offices

R. N. Turner, Dist. Mgr., 228 No. LaSalle St., Chicago 1, Ill.; B. H. Mueller, Dist. Mgr., 6625 Delmar Blvd., University City, (St. Louis), Mo.; Philip D. Barnard, Dist. Mgr. 2036 Addison, Houston 5, Tex.

Branch Offices: Denver, Dallas, New Orleans

See our catalog in Sweet's

OHIO LOCOMOTIVE CRANES

GASOLINE • DIESEL
ELECTRIC • STEAM

25 TO 40 TON CAPACITY

THE OHIO LOCOMOTIVE CRANE CO
BUCYRUS, OHIO

EPPINGER AND RUSSELL CO.

Wood Preservers Since 1878

80 Eighth Ave., New York 11, N. Y.

PRESSURE TREATED
TIES—POLES—PILING—LUMBER
WITH
Creosote or
Chromated Zinc Chloride

TREATING PLANTS
Jacksonville, Fla. Norfolk, Va.
Eddington, Pa.

THE OWEN BUCKET CO.
6010 BREAKWATER AVE., CLEVELAND, O.
BRANCHES: New York, Philadelphia, Chicago, Berkeley, Cal.

READER COMMENT

More Data on Bolt Stresses

Sir: The Method given by A. A. Brown in *ENR* July 7, p. 64, for figuring the "Stresses in Bolts and Piers for Wind Loads on Columns" is not new. As long ago as 1916, this method was given in "Bridge Engineering," by the late J. A. L. Waddell, published by John Wiley and Sons.

Those interested in a fuller discussion of the subject will find it beginning on page 304 of Chapter XVI of this book, the author of the chapter being Shortridge Hardesty. Not only are the various complex factors involved discussed, but also the different conditions of loading under which anchor bolts must function. While the book "Bridge Engineering" is now out of print, it can no doubt be seen in any large library.

Both Mr. Brown and "Bridge Engineering" deal with moments in one plane only, whereas it frequently happens in practice that a column is subject to concurrent moments in two planes at right angles to each other. For unimportant cases of this nature, the above method might be used to get approximate results, but on large structures a more exact method should be used. One such method, based on the column analogy, is given in the March, 1940, issue of *Civil Engineering*, and a second method is given in the October, 1940, issue of the same magazine.

KARL W. LEMCKE
Associate Engineer
Hardesty & Hanover
New York, N. Y.

Engineer-Run World?

Sir: Referring to R. B. McFarlane's letter in your August 18 issue p 132, I have always thought kindly of the idea of an engineer-run world, and I was greatly surprised at the negative response to the idea by a fellow-structural engineer.

This is only my opinion, but Mr. McFarlane does not conclusively show the characteristic thoroughness of an engineer by his superficial criticism of the idea.

The list of human forces that must be dealt with in stabilizing society are the very job of the engineer, who undertakes it. If these human weaknesses are the stopping point before undertaking the task, we would be admitting that we are merely "handbook" engineers, who can follow only the ideas of engineers before us and who do not really understand the problem we are attempting to solve.

In recent articles I have read in engineering publications, there seems to be an idea that an engineer is something other than a human being. As a claimant to being a member of the human race I resent this, along with other things that aroused me to write this letter.

There is no other mind trained as well for the task, or any other task in human endeavor or within the possibility of human accomplishment, than the mind of an engineer (if he really is one). Just give him the chance. The general public may be hard to convince, but it is shocking to me that so-called engineers have to be sold on the idea.

One of the most respected men in the United States today is respected because of his understanding of human problems on a huge scale. And he has this respect despite the fact that he was dragged through an era with his name in the mud, mostly because of circumstances not brought about through any fault of his own. I refer to Herbert Hoover, not a structural engineer, but an engineer no less.

MITCHELL J. ALSTER
Chicago, Ill.

Highway Traffic Control

Sir: Congratulations on your fine editorial of August 18, p. 21, advocating the enactment and strict enforcement of minimum speed laws on parkways and limited access highways which carry large volumes of traffic.

I believe that this suggestion should be made applicable on all primary and many secondary federal-aid highways immediately because it not only will provide greater capacity on our existing heavily loaded highway system but it also will prove of considerable value in reducing the number and the severity of accidents.

In addition to your suggestion that the "Keep Right Except When Passing" law should be more rigidly enforced there are several other rules of the road which should receive more attention by enforcement officials, such as stopping on the pavement (17 percent of the accidents on the Merritt Parkway can be attributed to this cause alone), failing to signal correctly and in time, and failing to lower high beam headlights when approaching another vehicle 10-30 percent of drivers were guilty of this infraction based on several studies, (N. J. and Conn.). Actually these so-called minor violations are anything but minor when their effect on the operational efficiency of our highway system is concerned.

If the true facts were really known, instead of speeding being placed at the top of the list as one of the major causes of accidents it would drop way down to a point that would place it amongst the minor violations while many of the present day so-called minor violations would rise to their rightful place in the accident picture.

Why so many traffic experts, educational authorities and enforcement officials insist on plugging the old saw "That you can do no wrong unless you speed" is beyond me because by so doing the facts of life, so to speak, are withheld from the motoring public.

It is my humble opinion that until such time as everyone who is truly concerned with reducing our extremely heavy accident toll does a right about face and treats all accidents alike whether it be a so-called minor fender scratch or a fatal accident there will be no appreciable reduction in the accident toll. My opinion is based on the fact that at best only 30-40 percent of all reportable accidents are reported. If this percentage were nearer 90 or 95 percent then in many instances motor vehicle administrators would be apprised of the fact that a particular motorist who had been in several minor scrapes needed a check-up or talking to before he or she became involved in a more serious accident.

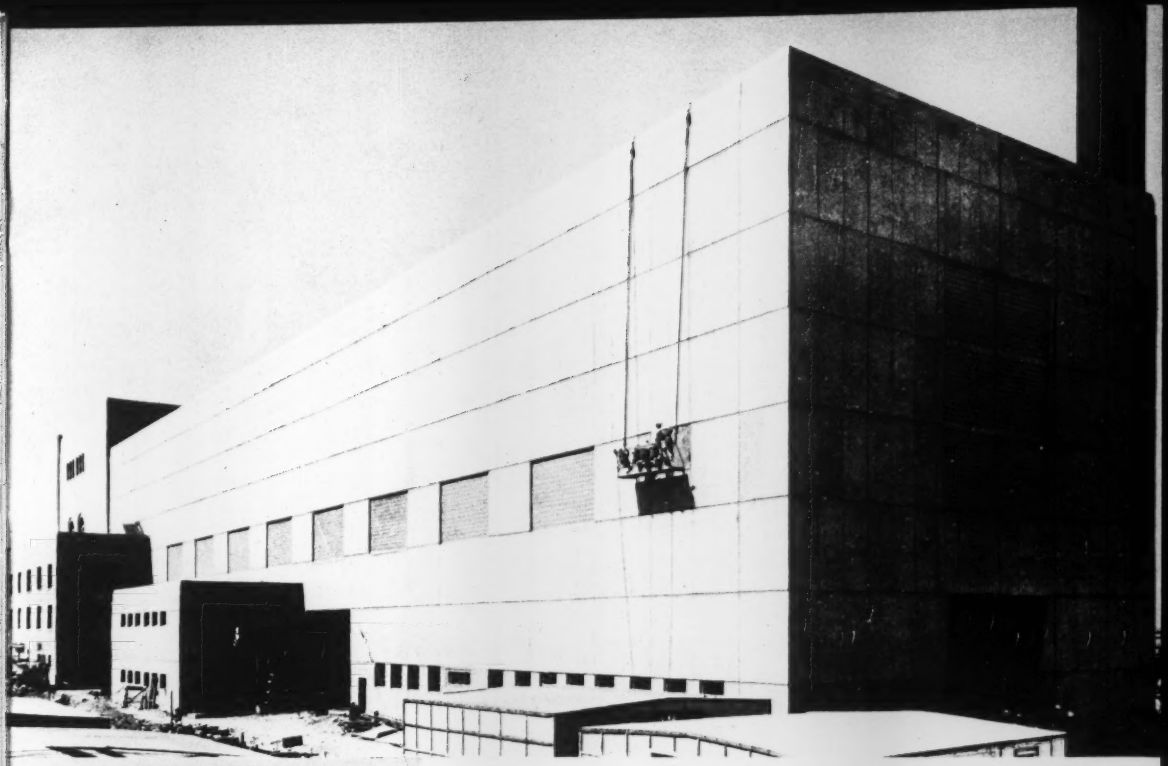
In addition, the psychological advantage of requiring the reporting of every accident should be quite worthwhile in making motorists more conscious of their responsibilities.

HERBERT J. KLAR
Lynbrook, N. Y.

History for Engineers

Sir: May I, an Englishman, suggest to your correspondents, Messrs. Balog (June 9) and Burke (Aug. 18) that whatever the merits of their suggestions that engineers take up the study of history, (as a profitable sideline?) the columns of a technical journal are not the proper place to air their criticisms of Mr. Churchill—or any other statesman.

FRANK J. BLEACKLEY
Structural Engineer
Montreal, Canada



Pacific Gas and Electric Co. Station "P"—Steam Plant, San Francisco, Calif. Engr.—Stone & Webster Engineering Corp., Boston, Mass.; Contr.—Stone & Webster Engineering Corp., San Francisco, Calif. Pozzolith Ready-Mixed Concrete supplied by Readymix Concrete Co., Ltd., San Francisco, Calif. Master Builders Embeco and Metallic Hardener also used. (See products' use below.)

Architectural Concrete . . . *with* POZZOLITH

Pozzolith minimizes honeycombing and other segregation defects, as well as form marks. This is because cement dispersion produces greater plasticity and cohesiveness, with easy placeability, even when water is reduced as much as 15%.

In addition to improving the appearance, Pozzolith provides these important advantages:

1. LOWER COSTS — Placing and Finishing
2. HIGHER STRENGTH
3. LOWER PERMEABILITY
4. GREAT DURABILITY

You can meet your concrete requirements *better and more economically with Pozzolith than by any other means,* such as the addition of extra cement or of any other admixture, either added or interground.

Write for ACI and ASTM bulletins on concrete design, specification and production . . . also new Pozzolith booklet. No obligation whatsoever.

OTHER MASTER BUILDERS PRODUCTS IN WHICH CEMENT DISPERSION IS EMPLOYED

EMBECO...
For non-shrink grouting and reintegration.

MASTERPLATE...
Industry's toughest floor . . . "the iron that stays on top."

MASTERTEX...
Water-resisting cement-base paint which protects and decorates exterior and interior surfaces of concrete and masonry.

OMICRON MORTARPROOFING..
Controls shrinkage cracks; minimizes leaky brickwork, also retempering; contains stearate.

the MASTER BUILDERS Co.

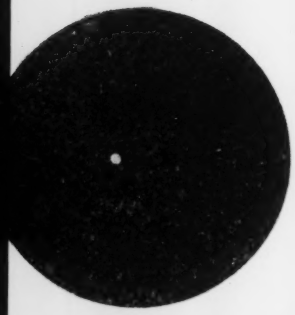
CLEVELAND 3, OHIO TORONTO, ONTARIO

Topping Connecticut's famous

MERRITT PARKWAY

. . . with resilient, heavy-duty TEXACO

Two sections of the Merritt Parkway have been resurfaced with durable, joint-free Texaco Asphaltic Concrete by the Peckham Road Corporation, White Plains, N. Y. and Pavements, Inc., New Haven, Conn. The photo below brings out the skid-resistant texture of the new Texaco surface.



Most motorists driving north into New England travel over the Merritt Parkway, a toll road which crosses southern Connecticut. Traffic on Sundays in August averages 39,000 vehicles; Labor Day traffic has reached as high as 54,000.

This year, portions of the original pavement on the Parkway showed signs of disintegration. Connecticut handled the problem by the same economical, effective method which road builders throughout the country have employed for years. Using the existing concrete as a base, a resilient, heavy-duty Texaco Asphaltic Concrete surface of the hot-mix, hot-laid type has been constructed on approximately four miles of this heavily traveled route.

Whether your road or street project requires as heavy-duty a pavement as Texaco Asphaltic Concrete, a low-cost type of asphalt surfacing, or an inexpensive asphalt surface-treatment, Texaco Asphalt products have the answer. This complete family of high-grade Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils, refined from carefully selected crudes, is the result of 45 years experience in supplying America's asphalt requirements.

Two helpful booklets, which describe all types of asphalt construction for streets, highways and airports, may be obtained free by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

REG. U.S. PAT. OFF.

TEXACO ASPHALT